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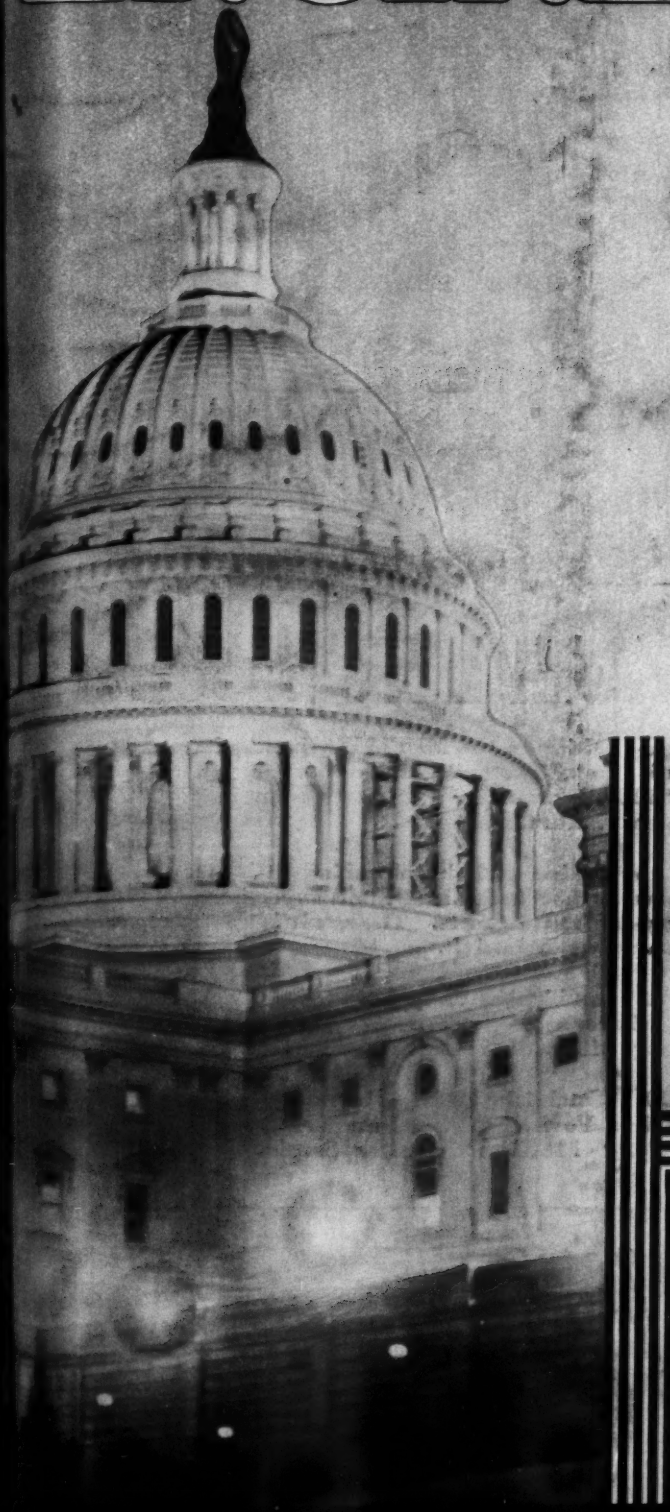

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Plumbing and Heating Industry Aids President to Stimulate Home Building

DECEMBER 26, 1921

THE "KINGSTON" COMBINATION

MUELLER "Kingston" vitreous china syphon-action reverse trap closet combination; comprised of H-220 vitreous china syphon action reverse trap bowl with extended lip; back supply inlet with jet; improved sanitary plain flushing rim and squarely bolted base. H-251 vitreous china eight gallon colonial design low-down tank; bottom supply; high pressure elevated float valve; all white colonial pattern double action trip lever; positive guide flush valve; n. p. elbow flush connection; H-330 n. p. supply pipe and angle stop valve to wall. White guaranteed open front saddle seat and cover; floor flange; closet bolts and china bolt caps.

—a MUELLER product

A distinguished addition to the MUELLER line of vitreous bathroom fixtures is the "Kingston" Combination. Built with characteristic MUELLER craftsmanship, its design is particularly adaptable to most bathroom layouts.

Both the vitreous china and the plumbing fittings used in its manufacture were made under MUELLER supervision in MUELLER laboratory-controlled plants. The result is a fine balance of careful design and workmanship.

The "Kingston" Combination is typical of the MUELLER line of plumbing and vitreous products. Detailed information on this or any other fitting will gladly be sent upon request.

MUELLER CO. (Established 1857) *Factory:* Decatur, Illinois. *Branches:* New York, Dallas, San Francisco, Chicago. *Canadian Factory:* MUELLER, Limited, Sarnia.

MUELLER

Trade-mark Reg. U. S. Pat. Off.

Why take a chance?

Play safe . . . install Vogels!

YOU know, even better than your customer knows the use and abuse that frost proof closets have to stand year after year.

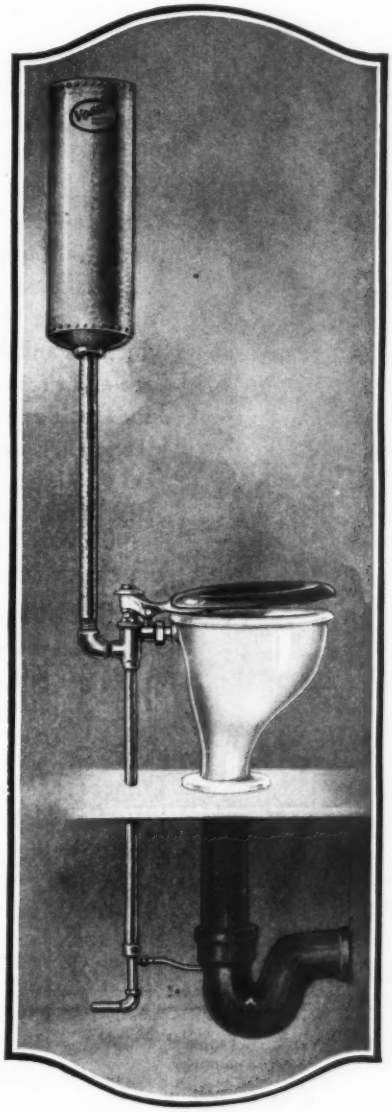
They are put in to do a tough job and give real service—and that's what VOGEL Frost-Proof Closets have been doing for 24 years. More than 500,000 installations prove this.

Don't take a chance... a VOGEL is a sure bet

Literature imprinted with your name and address sent promptly

See inside back page for VOGEL advertisement on No. 10 and 10-A Closet Combinations

JOSEPH A. VOGEL COMPANY
Wilmington, Delaware
St. Louis, Mo.



Vogel Number One Frost-Proof Closet. Sturdy in construction, simple in operation—half a million in use.

VOGEL PATENTED *Frost-Proof* Products

DOMESTIC ENGINEERING

Plumbing & Heating Contracting and Merchandising

Established 1889

Vol. 137, No. 7 | December 26, 1931 | Whole No. 1959

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TERMS OF SUBSCRIPTION

Anywhere in the World, except Canada, $2.00 per year. Canada $4.00 per year.

Current copies, 20c each. Back numbers, 40c each

Published Fortnightly by
ENGINEERING PUBLICATIONS, INC.
1900 Prairie Avenue, Chicago

Entered as Second Class Matter on January 19, 1929, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

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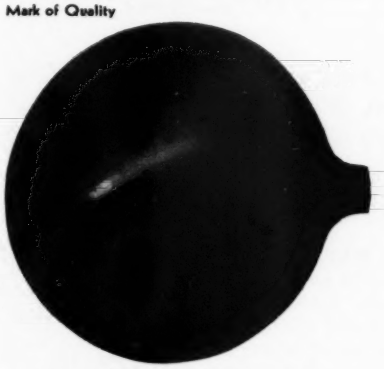
STOKES HARD RUBBER PRODUCTS

are WORTH HANDLING

Look for the Mark of Quality



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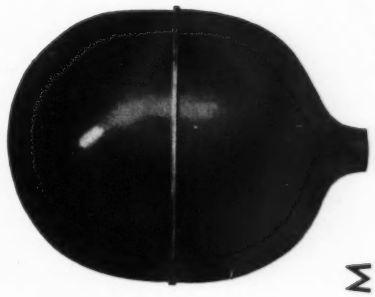
SOLD ONLY THROUGH RECOGNIZED JOBBERS



STANDARD OVAL FLOAT

They YIELD A PROFIT to JOBBER and DEALER alike

STOKES Hard Rubber Floats are profitable because they are not so highly competitive as copper floats. Then, too, they give you the chance to suggest something different and better than the ordinary, at a lower cost in the long run. Unlike other materials, Hard Rubber will never rust nor corrode. STOKES Hard Rubber Floats *may be guaranteed for the life of the tank.*

ASK YOUR JOBBER

Jos. Stokes RUBBER CO.
Trenton N.J.
Canadian Plant: Welland, Ontario

Ask Your Jobber

to show you a

STOKES HARD RUBBER ADJUSTABLE GUIDE ARM and Overflow Tube with Reducing Bushing

This is one of the most modern and satisfactory guide arms made. It can be swung around the overflow tube to any desired angle, making it very easy to connect with the tank ball.

The Reducing Bushing is also of Hard Rubber, with moulded threads, not subject to corrosion.

MOULDERS SINCE 1897

HARD RUBBER IN EVERY CONCEIVABLE FORM

Between Ourselves

ALL of us talk about competition between the building and other industries. But few stop to recall that the building industry is simply a name for a group of competing industries. It is significant that these many groups met for the first time at President Hoover's conference in an effort to determine how home ownership can be encouraged and developed. The move is an important one, and DOMESTIC ENGINEERING *not only gives you a complete summary of the meeting on Page 24 of this issue, but will tell you more about its accomplishments in later issues.*

Your Editor

A FIFTY-YEAR record of success is an accomplishment for any business concern and for that reason we take pleasure in telling on Page 22 of this issue of the growth of Barr & Creelman, plumbing and heating contracting firm of Rochester, N. Y. "Reckless bidding for contract work is demoralizing the industry and bringing profit to none but the builders. . . . It seems to me that the plumbing trend has turned definitely from job work to merchandising. Certainly no longer will job work bring sufficient profit to maintain a business," says one of the heads of this firm. Incidentally, the Barr & Creelman organization has been a DOMESTIC ENGINEERING subscriber for thirty-seven years.

CARE and Protection of Enamel Finishes" is the title of an article appearing in this issue, which, after you have read it, should be brought to the attention of your journeymen. It is important that they be thoroughly instructed in the precautions which should be taken in handling enameled ware, for with this knowledge the journeymen are in a position to prevent loss to the master plumber through damaged fixtures. If these precautions are taken, the chance for damage is reduced to a minimum, and it will be worth your while to take time now to study the article.

AGAIN in the Plumbing and Heating Merchandising section you will find special articles describing the selling methods of successful merchandisers in our industry. At one time or another every phase of retail selling has been covered in this section—always as put into effect by plumbing and heating dealers. In this issue you will learn how a Salt Lake City contractor is meeting changing merchandising conditions with "Skilful Retailing." Another article tells how a neighborhood survey produced business for contractors in a Pennsylvania town. "He Took the Public Into His Confidence" is the title of a story about a Minnesota contractor who made a survey of repair job costs and passed the information on to his customers to show how his "Shop on Wheels" saves them money.

"WE wish to thank you for your help in solving our problem. We tried several sources of information and you were the only one that gave us results."
—Brookside Plumbing & Heating Co., Kansas City, Mo.

WE HAVEN'T space enough here to go into any detail concerning the contents of the AUTOMATIC HEAT section, but we can't pass on without taking a moment to call your attention to this valuable part of "Domestic Engineering." Automatic heating is steadily increasing in popularity among home owners, and, in addition to new work, a big opportunity exists for the heating contractor in installing automatic heating equipment in existing homes. The articles in this section are designed to assist the contractor in technical and selling problems pertaining to automatic heat.

APPEARING in this issue is the sixth of Harold L. Alt's new heating series, entitled "Heating in Residences and Small Structures." In his article in this issue, Mr. Alt gives careful and thorough treatment to the subject of hot water circulating systems. He points out that "hot water circulating systems have a few inherent disadvantages which largely are due to the use of water as the heating medium," and then goes on to describe the various efforts that have been made from time to time to overcome or lessen these difficulties.

IT ISN'T at all unusual for friction to develop between the general contractor and one or more of the sub-contractors on a job. But it isn't often that you hear of a plumbing contractor charged with grand larceny, which is a penitentiary offense, because of a dispute of this sort. It all came about as a result of a New York plumbing contractor charging for extras on a cost-plus basis . . . but we won't spoil the story now by telling the whole thing. It appears on page 42.

The man who is so busy that he does not have time to read his trade paper is like the man who was so busy chopping wood that he did not have time to sharpen his axe.

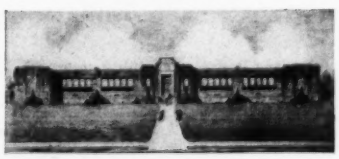
ADMINISTRATION BUILDING OF THE PHILADELPHIA BOARD OF PUBLIC EDUCATION . . . *ARCHITECT — Irwin T. Catharine, A. I. A., Philadelphia . . . HEATING CONTRACTORS — McClintock & Co., Philadelphia, Bower Brothers & Company, Philadelphia. Equipped with Webster Moderator System of Steam Heating.*

From the District School House to the Great University

A Few Outstanding Pennsylvania Schools heated by Webster Systems

COLESTOCK HIGH SCHOOL, TITUSVILLE, PENNA . . *ARCHITECT—W. Holmes Crosby, Oil City . . HEATING CONTRACTOR—Wm. M. Clark & Company, Inc., New Castle* Webster Vacuum System

BEAVER FALLS HIGH SCHOOL, BEAVER FALLS, PENNA. . . *ARCHITECT—Carlisle & Sharrer, Pittsburgh . . HEATING CONTRACTOR —Wm. M. Clark & Company, Inc., New Castle* Webster Vacuum System



PERRY TOWNSHIP HIGH SCHOOL, BERKS CO., PA. . . *ARCHITECT—W. Marshall Hughes, Reading . . HEATING CONTRACTOR —Warren F. Smith, Boyertown.* Webster Type "R" System

The heating requirements of our American "educational plants" are too varied to be met by any one "system" or product. Here, as in other fields, the widespread use of Webster equipment is due to the well established Webster policy to provide "*A heating system for every need*".

The new Administration Building of the Philadelphia Board of Education is essentially an Office Building with an Improved Webster Vacuum System and a single, central, Webster Moderator Control. At the Seminary of St. Charles Borromeo, Overbrook, Pa., chapel, dormitory and class room buildings are equipped with an Improved Webster system (open returns), and Moderator Control with supplementary manual zone control to each building.

The modern Colestock and Beaver Falls Schools illustrated at the left are heated by standard Webster Vacuum Systems. This type of Webster system meets best the requirement where there is a large portion of mechanical ventilation. For smaller school buildings, heated by direct radiation and depending on window ventilation, the choice is an Improved Webster Type "R" System with Webster *Hylo* Variator control.

The experience gained in heating more than 10,000 modern educational buildings of various types with Webster systems is available to heating contractors who are seeking to develop school-heating business, either new work or modernization.

a166

-since 1888

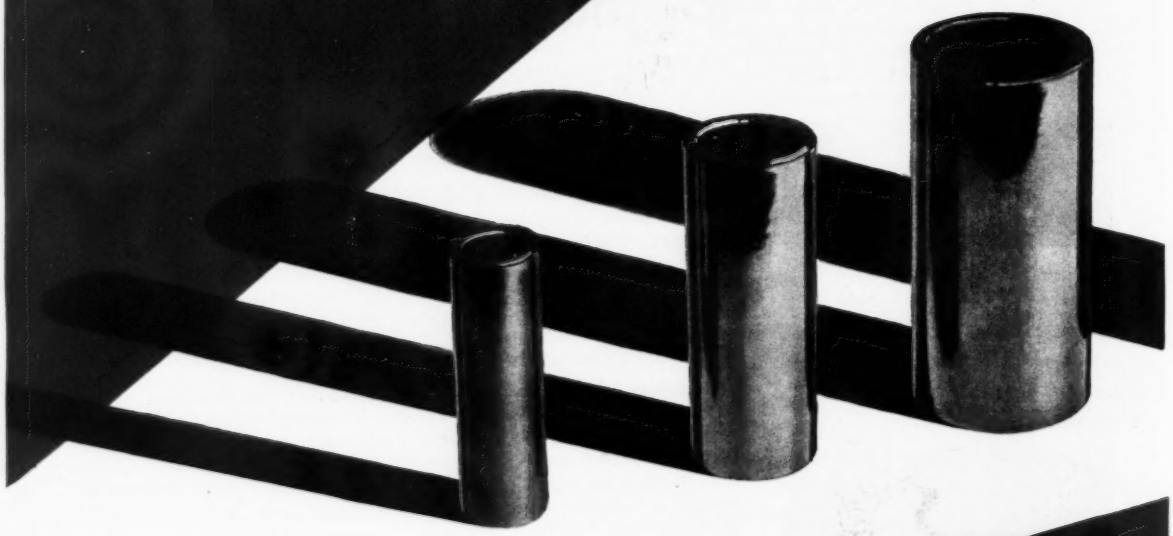
Webster

Systems of Steam Heating

Warren Webster and Company, Camden, N. J., Pioneers of the Vacuum System of Steam Heating

YOUNGSTOWN PIPE

always dependable



The YOUNGSTOWN SHEET & TUBE CO.

GENERAL OFFICES - - YOUNGSTOWN, OHIO

Kennedy

the favorite valves of a host of contractors

Standard Bronze Globe Valve

Kennedy Standard Bronze Gate Valve

Radiator Valve

Bronze Check Valve

Iron Body Gate Valve

KENNEDY Fittings, too

Complete lines of black and galvanized malleable iron screwed fittings, brass or bronze screwed fittings and standard cast-iron flanged fittings and flanges are also included among the large list of Kennedy Products—an additional advantage of standardizing on Kennedy.

If you are not already familiar with the Kennedy line, send for the new Kennedy Catalog — you will find it well worth looking through.

MANY contractors have told us that they use Kennedy Valves on *all* their jobs—large or small—as a matter of cost-free insurance. They have learned from repeated experience that when Kennedys are installed, they never need fear leaky threads or stuffing boxes, sticking stems, poorly-seating discs or gates, or other valve troubles. Furthermore, with Kennedy Valves they get this insurance without paying a premium, for Kennedy Products cost no more than standard market price.

That is why you will find contractors all over the country who have standardized on Kennedy Products for ten, twenty and even thirty years, or more. We have earned this loyalty only through consistently fair dealing—by making Kennedy Products thoroughly sound in metal, design and workmanship, by offering Kennedy Products at uniformly reasonable prices, and by standing squarely in back of every guarantee and promise.

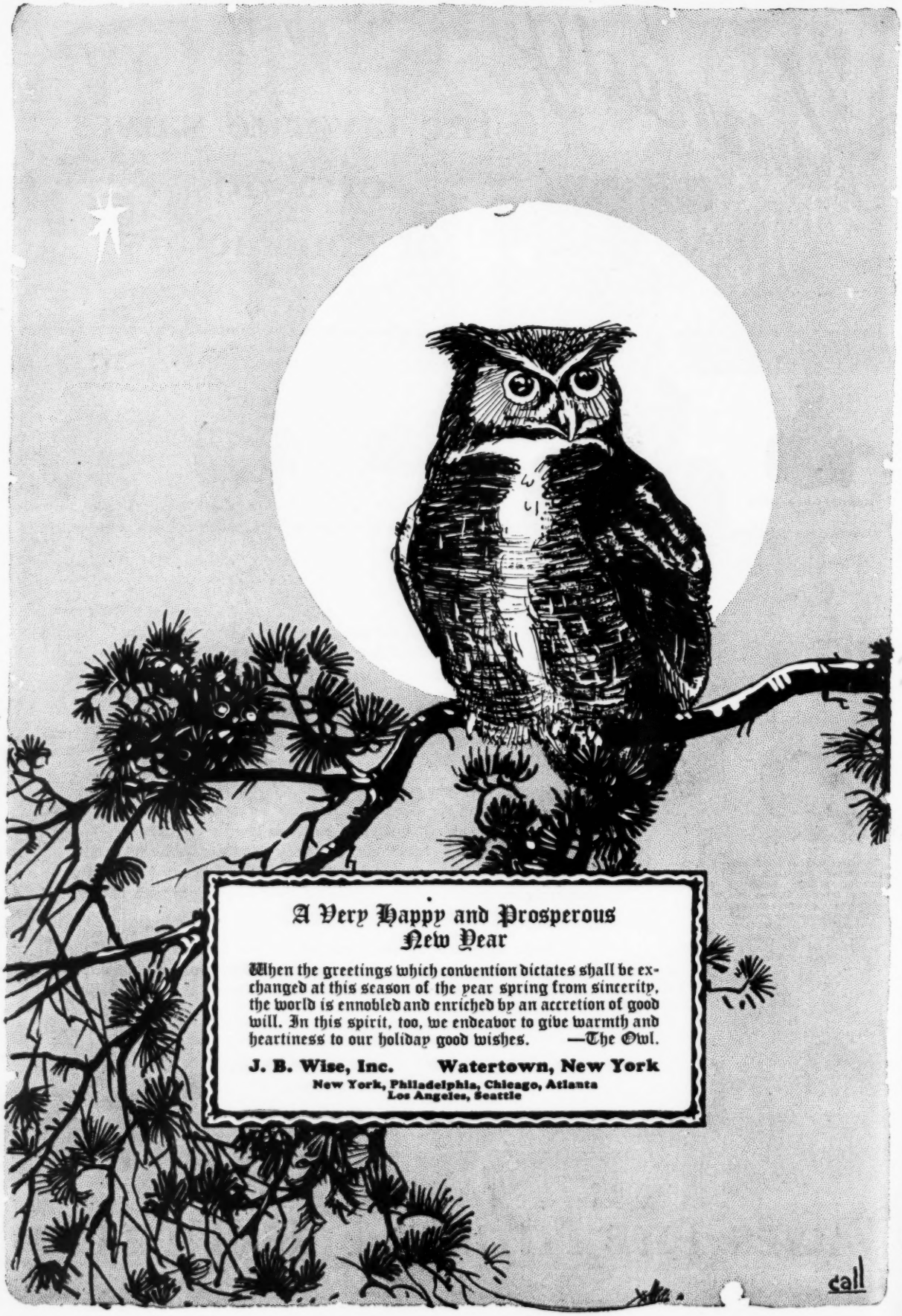
Order Kennedys for your next job. If you haven't a copy of the Kennedy Catalogue No. 48, write us today. This catalogue describes and lists the entire Kennedy line and will help you make a selection for trial.

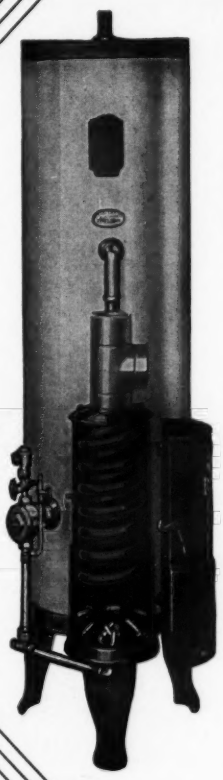
The Kennedy Valve Mfg. Co., Elmira, N. Y.

Branches and Warehouses in Principal Cities

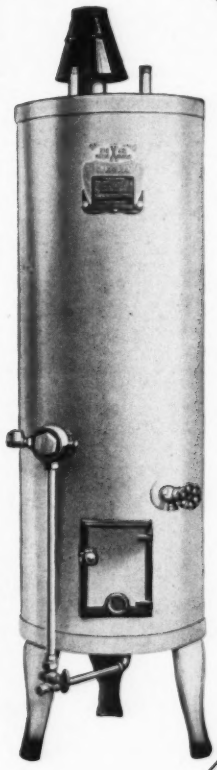
KENNEDY

VALVES~PIPE FITTINGS~FIRE HYDRANTS


A Very Happy and Prosperous
New Year
When the greetings which convention dictates shall be exchanged at this season of the year spring from sincerity, the world is ennobled and enriched by an accretion of good will. In this spirit, too, we endeavor to give warmth and heartiness to our holiday good wishes. —The Owl.
J. B. Wise, Inc. Watertown, New York
New York, Philadelphia, Chicago, Atlanta
Los Angeles, Seattle
call



No. 20SA Hotstream Automatic Storage Heater, Side Arm Type, List Price $66.00 Complete



Dixie Automatic Storage Heater, "Internal Type." Made in three sizes, 20, 30 and 40 gallons. List Prices: $55.00, $70.00 and $85.00.

if you mean business about getting more hot water heater business

HERE'S HOW!

. . . . offer your community "a millionaire's hot water service, at a price within anybody's reach;"

. . . . offer your community "hot water happiness" that can be enjoyed 24 hours in every day—all year round;

. . . . offer your community the maximum satisfaction at minimum cost.

In four words—sell them the Hotstream! Its trim clean beauty will catch and hold their first casual glance—then as you enumerate and point out one by one the many Hotstream features, heretofore found only on the most expensive hot water heater installations, you'll find your prospect warming up, and eagerly drinking in the story, word by word. Before you finish, he'll *want* the Hotstream, because his home and family want the type of hot water service he *knows* he'll get with Hotstream.

And when you quote him Hotstream price—there is nothing that can keep him from buying Hotstream.

In your community, just as in hundreds of others, every home owner, apartment owner, and shop owner, is a prospect for Hotstream service. And every sale will do its share in promoting others. So if you mean business about wanting more business—a-c-t! Send at once for the new 1932 Hotstream catalog.

THE HOTSTREAM HEATER CO.

"Makers of Heaters that Heat"

CLEVELAND, OHIO

Manufacturers of a Complete Line of Automatic Storage Heaters, Tank Heaters, Indirect, Gasoline and Kerosene Water Heaters.

Represented in Canada by W. H. Cunningham & Hill, Ltd., Toronto

HOTSTREAM
AUTOMATIC STORAGE
HEATERS

Costs Are Low, Yet STREAMLINE Brings A Higher Price

•

Your Chance for Profit Lies in This Combination

EVERY owner, builder, architect and engineer admittedly expects to pay more for copper than for iron, but the cost of an installation of Mueller STREAMLINE hard copper pipe and fittings is so reasonable that in many cases, plumbing and heating contractors, using this product, are meeting the figure for iron pipe and threaded fittings.

Between this recognition of a premium price for copper and the relatively low Mueller installation cost is the chance for a larger profit than the trade has seen in many a day.

The cost of a Mueller STREAMLINE installation is comparable to iron for three good reasons—saving on insulation costs; a saving in the weight of materials; no waste endage.

If you are not familiar with these savings and what they mean in profits to you, consult your jobber or write for our catalog.

The heart of a Mueller installation is the patented joint. Cleaned, fluxed and heated, this joint is ready for the journeyman's skill. A few drops of solder are introduced into the solder feed hole. Immediately an unbroken solder ring is visible around the end of the fitting, showing, conclusively, that a perfect bond of pipe, fitting and solder has been formed.

This is the unfailing sign of a perfect joint. Rust cannot corrode it. Expansion cannot work it loose. Vibration cannot make it leak. The joint is really stronger than the pipe itself.

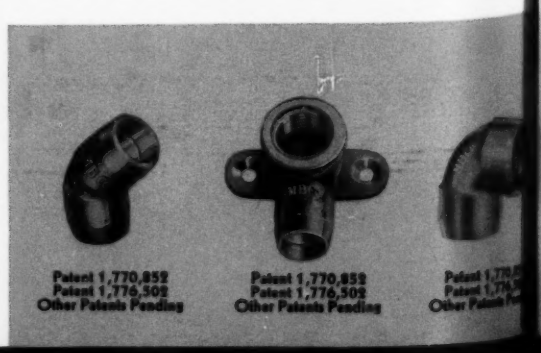
Mueller STREAMLINE fittings are furnished in full range and in sizes from ¼" to 6" inclusive.

Mueller Brass Co.

PORT HURON, MICHIGAN

MUELLER BRASS CO. OF CANADA, LTD.
TORONTO, ONT.

Three Generations of Brass Making



K-3395—Speakman Anystream Self-Cleaning Shower Head. Pat. Jan. 2, 1923 & Nov. 3, 1931.

THE SELECTION OF THE RIGHT HEAD IS THE MOST IMPORTANT PART OF THE SHOWER INSTALLATION

SINCE the Speakman Company brought out the Anystream Self-Cleaning Shower Head the development of various types of heads for specific purposes has been rapid.

All of these developments have been sponsored by Speakman. For instance:

There are key and screw-driver operated heads for hotels, public and semi-public places.

Wall type heads for hospitals, prisons, and institutions.

Cluster heads for golf, country, and athletic clubs.

All of these have the Anystream Self-Cleaning principle which permits any desired adjustment of the water's volume and force.

These heads can never stop up!

So important do we consider the subject of shower heads that we have prepared a 16-page bulletin on the subject. This will be sent to plumbers and wholesale plumbing supply houses requesting it.

Because the head is the final expression of the shower, this 16-page bulletin should be in every plumber's file. It will be sent promptly upon request.

SPEAKMAN COMPANY
Wilmington Delaware

SPEAKMAN
SHOWERS & FIXTURES

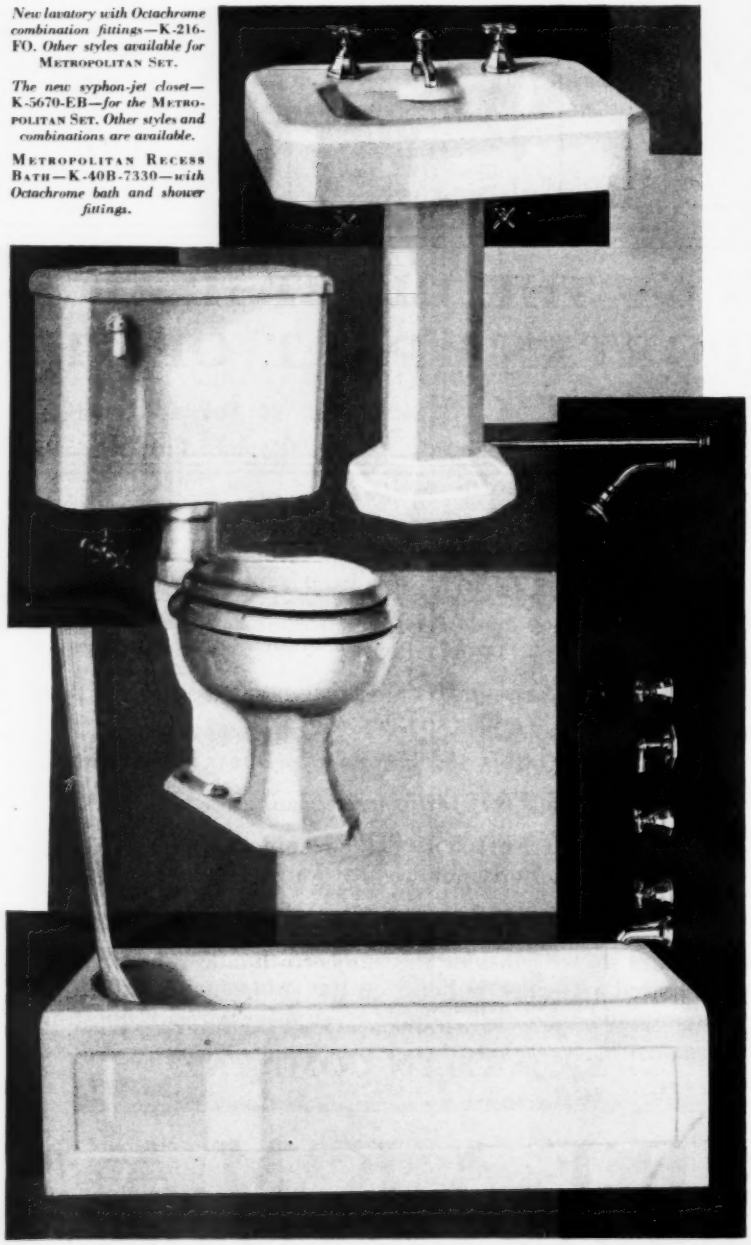
KOHLER MATCHED FIXTURES

give you something new to say _____ and sell!

New lavatory with Octachrome combination fittings—K-216-FO. *Other styles available for* METROPOLITAN SET.

The new syphon-jet closet—K-5670-EB—*for the* METROPOLITAN SET. *Other styles and combinations are available.*

METROPOLITAN RECESS BATH—K-40B-7330—*with Octachrome bath and shower fittings.*



EVER since Kohler announced that, for the first time in the history of the plumbing industry, you could sell *matched sets* of fixtures and fittings, plumbers have been thinking fast and working hard. Right now, many are *proving* that this new departure means larger unit sales—and offers a way to get remodeling business.

We can say flatly that this step by Kohler marks the first definite advance in the industry for years. (You have been able to match up your own sets before, of course, and to accept the manufacturer's suggestions.) But never before have you been able to sell sets of fixtures that agree in every detail of design and construction—from smooth shining surface to distinguished fittings!

Made for each other, down to the last detail

The illustrations show clearly what you can talk about in selling these Kohler sets. Notice how each piece harmonizes exactly with the others. Edges are square. Corners, usually rounded, turn at abrupt angles. Rims are conveniently wide and flat, affording ample room for shaving cream, tooth-brush, powders. Surfaces are plain and modern throughout.

Yet Kohler matched fixtures are popularly priced! Designs are so planned that a selection of other fixtures in the same set can be made to fit purse and purpose. The closet, for example, comes in syphon jet, reverse trap and wash-down models, and in tank or flush valve combinations. The point is that with any fixtures in a particular group, the entire installation is a decorative unit.

More information is yours for the asking. If possible, come into the Kohler showroom to see the fixtures at first hand. Kohler Co. *Founded* 1873. Kohler, Wis.—*Shipping Point*, Sheboygan, Wis.—*Branches in principal cities*. Look for the Kohler trade-mark on each fixture and fitting.

KOHLER OF KOHLER

27 inch Jacketed
Burnham Boiler

And Now a 27" JACKETED BURNHAM for Those LARGER JOBS

TO THE popular 17-inch Jacketed Burnham Boiler is now joined a 27-inch mate No. 3 Series for the bigger jobs. It has all the helpful selling points you expect in Burnhams.

Each is the fuel-saving, long-fire-travel water tube type, with heavy steel jacket in rich coloring, insulated with 4-ply air cell asbestos sheets.

Special Burnham jacket makes installation easy but solid. The jacket goes on last, after all connections and tests are made. No chance of accidental denting or gouges. Prices and literature gladly sent.

Burnham Boiler Corporation

IRVINGTON NEW YORK

Representatives in all principal cities of the United States and Canada

MODERN HEATING MAKES MODERN HOMES

"Do They Get Attention?"

THE DIFFERENCE BETWEEN AN OLD HOUSE AND A NEW ONE IS PLUMBING!

"I'M keeping a fresh supply of the DOMESTIC ENGINEERING Remodeling Posters always on hand. I'm using them not only in the windows of my store but on the walls inside and on my trucks and automobile.

"Do they get attention? Yes. That brilliant orange and the sharp black will get attention anywhere.

"Just keep them changed and fresh looking all the time and they'll do a good job. I'm going to have them printed on my letterheads, envelopes, billheads and other stationery. I've used them in newspaper ads and I'm going to use them again for that purpose."

You'll want to get in on these Remodeling Posters. They'll help put the remodeling idea over in your community and they'll establish you as remodeling headquarters.

Order a supply today. Put them to work for you at once. Use them and their slogans everywhere and anywhere you wish.

The actual size of these posters is 25 ins. by 4½ ins. They're printed in orange and black and are commanding enough to get attention no matter where you display them. Here are the low prices. Order your supply now.

100 posters (50 plumbing and 50 heating)	$1.00
50 posters (25 plumbing and 25 heating)	.50
20 posters (10 plumbing and 10 heating)	.20
10 posters (5 plumbing and 5 heating)	.10

DOMESTIC ENGINEERING

1900 Prairie Avenue Chicago, Illinois

..SURPLUS STRENGTH

TRUS-FITTING *that* PROTECTS PROFITS!

TRUSS-REINFORCED to stand up under emergency stress or strain, Square "Gee" Trus-Fittings have a world of surplus strength that protects your profits. For the rugged reinforcement makes the fitting stand up under emergency loads and strains. Square "Gee" Fittings . . . and unions too . . . are always alike, always good. Grabler's unusual manufacturing methods and triple inspection policy makes sure of that. Standardizing on Square "Gees" is a certain way to solve your fittings problem.

THE SQUARE "GEE" LINE

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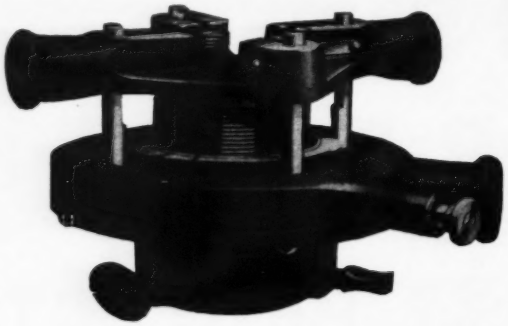

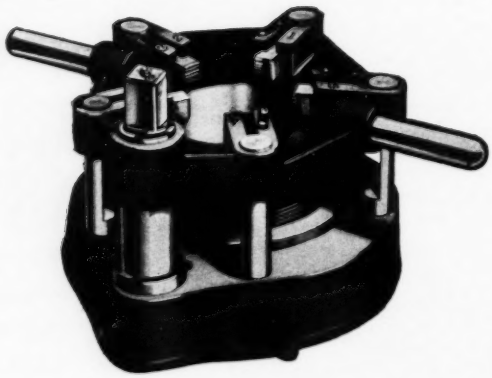

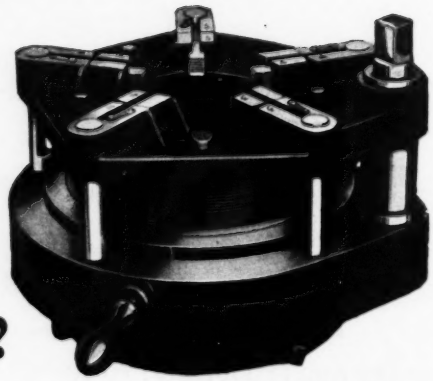

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ANALYZE THE VALUE

Our Industry

THE USES OF ADVERSITY

"Sweet Are the Uses . . . ."

One of the wisest of the men who have graced this earth of ours once preached a little sermon on the value of adversity to the human being. Undoubtedly he was right, for it is under adversity that we learn some of the lessons which we seem unable to learn in prosperity. We would often refuse, if we could, the "blessing in disguise;" but the passage of time shows us that something has been gained when we were most prone to think that all was lost.

For the General Good—

First among the effects of the troubled years we have just put back of us is the intensive study of the influences at play in booms and depressions. In easy times, when money flows freely, abuses creep in. The conference on home ownership, for example, which held its sessions only a few days ago, took up one phase of home financing that has cried aloud for adjustment. Yet, for just so long as false optimism was the note of the times, nothing was, nor ever would have been, done about this.

In Our Own Industry—

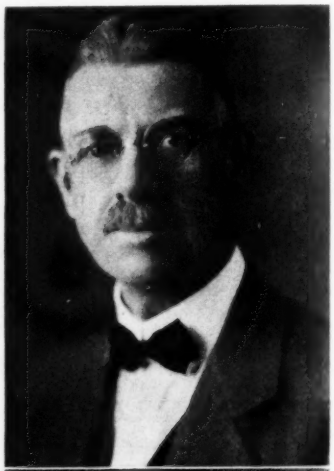
Abuses crept into our industry—the entire building industry, in fact—during the years of prosperity. Not only were there actual practices that were harmful. But the period was marked by antagonisms between the various branches of the industry which made anything like a concerted program impossible—at any rate to any definitely effective degree.

What Is Now Happening—

But difficulties are changing all that. In one metropolitan area there is a close co-operation, involving the three branches of the industry, in a merchandising campaign to put over quality merchandise, through recognized channels. We have carried stories of wholesaler-contractor co-operation that has been effective, and have not, of course, been able to cover all such situations. Merchandising ideas have been more quickly grasped than ever before. The desire of the American Gas Association to inaugurate an era of co-operation is significant. Plain speaking at the recent Central Supply Association meeting shows a new understanding between the various branches of the industry.

Time alone will tell how we will accept the lessons of our adversity—at present it seems that we are willing scholars.

a manufacturer
a wholesaler
a contractor
Discuss the Industry's Problems



Charles M. Swinnerton (top), of Los Angeles, Calif., a director of the National Association of Master Plumbers, and Val W. Palmer (below) of Logan, Utah, both of whom expressed the contractors' viewpoint at the meeting

THE plumbing and heating industry's needs as seen by representatives of the manufacturing, wholesaling and contracting branches of the industry were described in an interesting discussion that developed at the recent semi-annual convention of the Utah State Association of Plumbing and Heating Contractors, held in Salt Lake City.

The discussion followed an appeal for closer co-operation between the three branches of the industry by Walter Adams of the Pacific States Cast Iron Pipe Co., of Provo, Utah. Among those who expressed their views on the matter were Charles M. Swinnerton of Los Angeles, Calif., a director of the National Association of Master Plumbers; Ralph H. Ludlow of the Mountain States Supply Co., Salt Lake City; and Val W. Palmer of Logan, Utah, a member of the board of governors of the state association. In his address Mr. Adams said in part:

"The problems of the master plumber vitally affect the jobber and the manufacturer, as they are all interdependent and have equal responsibility in the functioning of the industry. The manufacturer is the ultimate source of supply and the master plumber is the final outlet. We are all in the pit together.

"How can we co-operate to improve the plumbing business?

"The menace at present comes from the breakdown of established methods that have built up the business. Each unit must co-operate honestly and intelligently with the others. It is obvious that if the plumber were eliminated the other units would starve to death. The manufacturer needs the jobber to facilitate distribution, credits and collections. The plumber needs the jobber for convenient supplies and credit.

"The association should control every craftsman in the industry who should be under license. The medical profession has long since eliminated quacks who sold patent medicine as a cure for any and all diseases known to mankind. The evils of such practice are well recognized, but the evils of everyone installing their own plumbing or having it done by handymen who are not qualified, have not been so emphatically impressed upon the public.

"We must eliminate the incompetent plumber by requiring the license and examination. The jobbers by

requiring a proper credit basis instead of giving credit to almost any person who desires it will greatly facilitate the elimination of undesirable plumbers in the industry."

Mr. Adams quoted Dr. Julius Klein, assistant secretary of commerce, to the effect that nothing is more extravagantly dangerous than to withdraw from association activity at the present time.

In conclusion, he named the following factors as essential in improving the industry: (1) Co-operation between the three units. (2) Credit only where deserved. (3) The effective organization for publicity. (4) License the competent and eliminate those who are unfit.

A Wholesaler Gives His Views

Mr. Ludlow took the floor to say that he was quite in accord with the principles as outlined by Mr. Adams, but that in addition more intensive selling on the part of the masters was necessary. One reason, he said, that the direct selling houses have made inroads in the plumbing business is that they are frequently far ahead of the individual master in merchandising. He said that the masters generally do not keep a sufficient line of merchandise on hand to properly display the same and often do not have a competent person in the store who is able to quote prices and prepare the necessary contract, adding that the direct selling houses are well equipped to answer all questions asked by a prospective customer.

"A ten per cent mark-up by the jobber is ridiculous. The plumber, as the contact man and retail merchant, should set the retail price of the commodity" — Charles M. Swinnerton

Continuing he said he did not believe that the price factor was so important if kept within 10 per cent of the price quoted by the direct selling houses, if the master plumber would sell quality merchandise. He stated that the supply houses were willing to donate the services of their salesman at any time in order to help close the deal with the master plumber's prospect. He also said that one of the disadvantages of quoting a 25 per cent mark-up on goods to be sold through a plumber was that the prospective customer would promptly state that they were able to buy from the plumber at a less cost.

In other words, he said, the plumber was not adding the amount to the cost of the fixture that he had requested the supply house to do in order to give him a fair margin of profit.

The Contractor's Viewpoint

Mr. Palmer, in discussing the situation from the viewpoint of the master plumber, lauded the work of the National association and other such organizations. He said the master plumber must first clean his own house by being more businesslike; that he must have a modern place of business with first class displays of fixtures, and must not depend upon supply houses to sell the merchandise for him. He said that the plumbing industry was being raised to a higher plane in the eyes of the general public.

"The contracting plumber," he continued, "must become a salesman. He should be familiar with his products so as to be able to point out their advantages to customers. The owner is now sold on the need of plumbing, so the master's problem is simply to convince him of the advantages of his particular line for the job in question."

Mr. Swinnerton, in discussing the factors of present conditions, declared that the merchant plumbers, manufacturers and jobbers control the situation.

"The plumber can not do much," he said, "if the manufacturer allows his product to compete with the plumber. The manufacturer and the jobber are to blame for extending credit to men with no credit standing. There has never been a scarcity of reliable masters in the plumbing industry, but the jobbers and manufacturers have been so anxious to attempt to create volume that they have given credit to incompetent plumbers who simply become outlets for a particular supply house. The established master can not compete against the supply house outlet which is simply in the business to make wages.

"A 10 per cent mark-up by the jobber is ridiculous. The plumber, as the contact man and retail merchant, should set the retail price of the commodity.

"One reason that the master plumber can not compete with the direct selling houses is that the prices of the manufacturer and jobber from whom he purchases are entirely out of line as compared with the direct selling houses.

"The master plumber can not, by stressing quality goods, sell higher than anyone else. People today demand price and unless the master plumber can quote prices that compare favorably with those of the direct selling house he has practically no chance of making a sale. The manufacturer must quote the master plumber goods at such a price that he can compete with the direct selling house. The manufacturer should give more attention to the reduction of costs. He must realize that people are demanding price and that the master plumber who tries to sell his goods at a price higher than the competitor cannot get very far.

"The question frequently comes up as to how it is that one contractor in a locality will secure practically all of the work. On every job that he figures he is considerably below the bids of the other competing contractors. There is only one reason for this, viz, that the contractor is receiving secret rebates, extra discounts for cash, and presents of sets of fixtures for buying from one particular supply house. It is obvious that the established master can not compete when the outlet wants only wages. Unfair preferentials and lack of a proper basis of credit are the two outstanding causes of the present condition in the plumbing industry.

"However, the situation is not hopeless. This seems to be the first time that the manufacturers and the job-

(Continued on Page 107)

Frederick J. Welder

A Half-Century of Growth

Barr & Creelman of Rochester, N. Y., established in 1880, have kept in pace with changing conditions and enjoyed consistent progress under wise management. Have read DOMESTIC ENGINEERING for thirty-seven years

CLOSELY linked with the development of Rochester, N. Y., the Barr & Creelman Co. is starting its second half century of plumbing and heating service to the community. Back in 1880 when William Barr and John A. Creelman founded the business, Rochester was a comparatively small city of gas lights, horse cars and canal boats. Now it is a thriving metropolis of 330,000, the third largest city in New York state. Where once the waters of the Erie canal cut through the center of the city modern electric subway cars now speed, while overhead has been constructed a wide, concrete thoroughfare known as Broad Street, one of the busiest and most important traffic arteries in the city.

The house of Barr & Creelman has kept pace with the rapid development of the city. From a small, two man enterprise it has evolved into a million dollar establishment employing more than a hundred workers. Beside the new Broad Street at the intersection of Exchange, the five story Barr & Creelman building stands as a monument to 50 years of faithful service to the community. A separate building houses the shops of this pioneer plumbing concern while two warehouses are maintained nearby to keep its large stocks of supplies. To carry on its work, a fleet of half a dozen trucks is used, ranging in size from one to seven tons.

Not only has Barr & Creelman kept pace with the growth of the city but it has had an active part in building up the metropolis during the last half century. The plumbing and heating equipment which brings comfort and sanitation to thousands frequenting scores of important buildings in the city has been installed by Barr & Creelman. Such modern structures as the 14 story

Home of Barr & Creelman Company at Broad and Exchange Sts., Rochester, N. Y., showing large retail showroom fronting on two streets, Where automobile stands canal boats wended their way when this pioneer plumbing firm was founded

Genesee Valley Trust Building, the General Hospital, the Sagamore Hotel, the huge American Laundry Machinery Co. plant, numerous public schools and churches, all owe their comfort and sanitation to this pioneer firm. In addition, its activities have extended far beyond the borders of Rochester, much farther, in fact, than its founders ever dreamed when they started their modest little shop half a century ago. In the new state prison at Attica, a model for the world, the reformatory at Elmira, large buildings at the state capital in Albany, Binghamton, and Ithaca, Barr & Creelman has handled the plumbing and heating contracts. Throughout New York state, the name of Barr & Creelman commands respect in the plumbing world.

This success, of course, was not achieved without a relentless struggle. Many plumbing shops which were "big shots" when Barr & Creelman started have since passed from the picture. Others which started at the same time and in similar modest fashion, while still in business, have failed to achieve the same success.

The growth of Barr & Creelman has been due more than anything else to its eternal spirit of youth. It has never grown old to the extent of shutting out new ideas and methods. On the contrary it has been among the first to adopt itself to new trends and methods in the industry. It is a unique organization, a rare link between the old and the new.

On the books of the company may be found the names of many customers whose first contact with Barr & Creelman dates back twenty-five, thirty and even forty years. Recently a prominent plumbing supply manufacturer called the attention of the firm to the fact that it had been a consistent customer of his factory for nearly forty years. He considered it a rare tribute to the policies of Barr & Creelman that the firm was just as eager to buy his factory's latest product as it was to buy those of more than a quarter of a century ago.

For thirty-seven years, or since 1894 to be exact, the firm of Barr & Creelman has been a subscriber for DOMESTIC ENGINEERING. The correspondent of DOMESTIC ENGINEERING in calling this to the attention of Frederick J. Weider, vice president and general manager of Barr & Creelman, pointed out that this was an unusual record in any kind of business.

(Continued on Page 100)

SUMMING up the work of the 31 committees which for months had been assembling data for the President's Conference on Home Building and Home Ownership, Dr. Ray Lyman Wilbur, Secretary of the Interior, selected the following findings as of greatest importance.

1. Each city and community should have a master plan.
2. Each city should be zoned.
3. All new homes irrespective of the income of the family can and should be of good design and sound construction.
4. Soundly built homes can and should be rendered available to all home buyers.
5. Home ownership should be a possibility at some time in the life of every thrifty family.
6. An adequate system of credit for the financing of homes should be established.
7. Old homes should be brought up to standard.
8. Slums and blighted areas should be eliminated.
9. Industry so far as practical should be decentralized.
10. Well advised large scale housing operations should be facilitated.
11. Homes should be freed from excessive burdens of taxation.
12. Beauty as well as utility should be made available within the home and in its surroundings.
13. The conveniences, protection and opportunities enjoyed by city dwellers should be rendered available as rapidly as possible to the residents of rural districts.
14. Work centers for household operations should be efficiently planned and equipped.
15. There is need of better framed and better enforced legislation with regard to all types of housing for the protection of the home and the community.
16. The need of development of further research, information service and public education.
17. The promotion of home ownership and better homes is the prerogative of all civic leaders and of citizens.

"There is a wide distinction between homes and mere housing. Those immortal ballads, "Home, Sweet Home," "My Old Kentucky Home" and "The Little Gray Home in the West," were not written about tenements or apartments. That our people should live in their own homes is a sentiment deep in the heart of our race and of American life. But they never sing songs about a pile of rent receipts." — *From President Hoover's address at Home Building Conference.*

President Calls Building Industry to First National Conference

The President's Conference on Home Building and Home Ownership gains importance when one realizes that this was the first time in American history all of the factors making up the so-called building industry met to discuss the common business from which each group makes its living. The meeting brought together the men who finance, those who design, those who contract and install, city planners, social workers, research engineers.

President Hoover had enlisted hundreds of volunteers to assemble for the first time the facts which retard or encourage home building. His opening address stressed the point that "we have fairly creditably solved every other segment of our credit structure more effectively than we have solved this one."—that of home construction. His interest is reflected in his proposal for the creation of a system of home loan discount banks, now before congress.

Definite influence on the building industry is certain to be felt to an increasing degree as the work of this conference is understood and carried forward. The reports on plumbing, heating and air conditioning are abstracted on this and the following pages. Similarly significant data from the conference will be given you by DOMESTIC ENGINEERING *in coming issues.*

Facts on Heating and Air Conditioning in Moderate Priced Homes

THE heating plant in the home contributes so much to the health and comfort of the people that it is strange it receives little or no support from public bodies charged with the duty of protecting the public in matters of health, comfort and safety. Neither state laws, municipal ordinances, nor building codes provide in any comprehensive way for such inspection or certification as to insure to the home owner an installation of a system that will meet his expectations or properly serve his needs. This statement was made at the President's Conference on Home Building and Home Ownership, recently held in Washington, D. C., and came as a result of the investigations and findings of the committee on fundamental equipment. The sub-committee on heating, ventilating and air conditioning consisted of A. C. Willard, Philip Drinker. W. H. Driscoll and Perry West.

The committee continued in its report as follows: The type, kind and adequacy of the heating system of the home seems to be considered in general as entirely outside the jurisdiction of the law and something that the home owner has the right and responsibility of determining without official aid, advice or interference.

Whatever protection he has must come from the heating contractor to whom he entrusts the installation. The ordinary heating plant installed in a home rarely warrants the employment of an engineering specialist. The choice of a good contractor is of far more importance than the saving of a few dollars by the selection of one whose bid may be low but whose ability may be lower. This situation has been one of grave concern to the heating industry and it would appear to the committee that the most promising attempts thus far made to protect the householder have been initiated and applied in a very effective way by the Heating and Piping Contractors National Association and the National Warm Air Heating Association.

The report further stated, in the field of steam and hot-water heating, the Heating and Piping Contractors National Association has established their code or principles of "Certified Heat" which apply only to radiator heating. This association has spent much time and money in the development and setting up of definite standards of radiator, pipe and boiler sizes, etc., to meet the heating requirements of small buildings in all sections of the country, paying particular attention to the home. Any member of the association, licensed in the sale of "Certified Heat" is compelled to install the work in accordance with the national standards. All plans are checked by one of the national association engineers who also inspects and checks the work during its installation, entirely independent of the contractor and compels observance of and adherence to the national standards. In the installation of such a system all guess work has been eliminated. Every part of the installation is

"Over 30 committees embracing the collective skill and experience of our country have been voluntarily engaged for the past year in collecting the best of national experience from every part of our country, in collating it into definite recommendations for your consideration."—*From President's address.*

made in accordance with best scientific data available and carries not only the guarantee of the local contractor but that of the Heating and Piping Contractors National Association.

Where fire insurance is carried on a home, inspection of the plant may be made by a representative of the Board of Fire Underwriters but this has nothing to do with the adequacy of the plant. The Board of Fire Underwriters concerns itself only with the elimination of fire hazards in the location of the boiler, the setting of the smoke piping, and the running of the heating pipes through partitions, etc.

It was pointed out that it is essential to establish in the minds of the home owner, whether he be buyer or builder, the importance of the relation between the house as a structure and the heating, ventilating and air conditioning equipment best adapted to that house. This relationship is especially important when considering the type of heating plant to be installed. Also, it was stated that in the case of well-built homes, almost any modern well-designed and properly installed system will be satisfactory, while in the case of poorly built homes no heating system will prove satisfactory.

It is amazing how completely the home owners of this country regard the heating plant as something entirely separate and distinct from the house in which it is to be placed and of which it is to become a part. It is equally surprising to discover just what the home owners mean by the best type of heating system. One thinks largely in terms of first cost, another of operating expense (of which fuel is only a part) another of simplicity and freedom from service calls, another of convenience, cleanliness and automatic operation, another of more uniform temperatures from floor to ceiling and of reasonable humidities.

In air conditioning systems in homes, the report stated that they may be arranged to take all or a portion of their air supply from out-of-doors and in this way furnish additional air to the rooms but it is generally found expedient from an economical standpoint quite satisfactory from the standpoint of health and comfort to recirculate most or all of the air within the building and to take little or none from the outside. The cost of fuel for heating will run about twice as much for a system taking all of its air supply from the outside as for one recirculating all of the air within the building. The ordinary detached house has enough natural air leakage to give sufficient air change for the house as a whole and does not necessarily require any additional provisions for general ventilation.

The optimum conditions of temperature, humidity, and air motion vary with climatic conditions, with the age of the occupants of the house, and with the type of clothing worn. Of these three factors, climate or acclimatization probably is the most important. In winter we like an indoor temperature which we would consider uncomfortably cool on a hot summer's day; older persons and babies feel the cold more than children and young persons do. The combination of these three variables—temperatures, humidity and air motion—is the basis for the cooling or warming effect of any atmosphere and an alteration in any one gives the impression of a change of temperature. Charts and tables are available by which these variations can be evaluated in terms of the heating or cooling effect and the householder should be made to realize that he can keep his home comfortable in winter and summer by the use of very simple and inexpensive means.

During the months in which central heating is used, it is best to maintain with moderate humidity, an indoor temperature between 68 and 72 deg. Fahr., the lower temperatures applying roughly to the northern half of our states and the higher temperatures range to the more southerly states. It is desirable that these temperatures represent average room conditions and that the differences between floor and ceiling temperatures be as small as possible. In homes with badly designed heating plants and improperly located radiators, differences of 15 deg. between floor and ceiling temperatures are not uncommon.

Facts on Plumbing and Sanitation in Moderate Priced Homes

"WHEN one thinks of a house as a structure being built for the purpose of becoming somebody's home, does it become such when the outershell is completed, even with beauty of outline and surface made possible by effective architectural design? We feel that what goes into a house to make it healthy, convenient, and economical to live in is that which changes it from a *house* into a *home*." This introductory statement was made by the committee on fundamental equipment of the President's Conference on Home Building and Home Ownership and, accordingly, throughout their investigations and report their chief concern was with how to make a *home* out of every *house*.

The sub-committee on plumbing and sanitation which consisted of A. E. Hansen, chairman, consulting engineer of New York City; E. F. Carter, director of the division of standards and inspections, Department of Labor; W. H. Driscoll, vice president of

Thompson Starrett Company and J. L. Murphy, president of J. L. Murphy, Inc., plumbing contractor of New York City, reported that during the last half century, and notably during the last thirty years, more progress has been made in plumbing and sanitation than in all the centuries before. And certainly it is no mere coincidence that the years in which the most progress has been made toward perfection in plumbing as an aid to sanitation have also been the years in which the greatest progress has been made in prolonging human life.

Together, plumbing and sanitation have made the modern city possible; have had direct bearing on the steady improvement of family and public health; and, without question, constitute the largest and most important of all gains in home safety, comfort, and convenience.

It is indeed an odd commentary on the workings of the human mind that, despite the cultural and intellectual heights that man has attained in past centuries, it is only in years so recent as to be well within the memory of many people now living that he has given serious thought to matters of personal hygiene, cleanliness, and sanitation. Nevertheless, the main differences between the homes of half a century or more ago and those being built today have largely been made possible by advances in plumbing and sanitation.

It is frequently said that even the introduction of water into dwellings is in itself one of the greatest steps yet taken toward making houses into homes and homes into the health centers science ordains them to be.

The span of a single life might well encompass the years in which sanitation has been developed from the crude practices of centuries into the classified knowledge and understanding of the laws and principles involved which now stamp it with the dignity of a science.

Certainly sanitation and plumbing have made the modern city possible. Indeed the vast systems that bring pure water to city dwellers and the equally vital but less celebrated systems that carry their wastes away have been likened to the blood system of the human body.

It is further stated in the report that without the present-day venting system it would be impossible to install a practical plumbing drainage system for any building exceeding one story in height. In other words, until the discovery was made that air pressures within plumbing drainage systems must be balanced within a few ounces, there had been serious difficulty in preventing the water in plumbing fixture traps from either being blown out into the fixtures by back pressure or sucked into the drain lines by vacuum.

When the discovery was made of the admission of air into the drainage system by means of what are now called vent pipes, the problem of preventing trap siphonage or back pressure was solved. Where the drainage system is now accompanied by a proper venting system, a circulation of air is established throughout the entire drainage system which lessens corrosion, maintains an air equilibrium at all times, prevents siphoning of traps and blowing of traps by back pressure, and prevents the escape of sewer gases into the building.

"The conference represents a place in our mastery of the forces that modern science and modern technology place at our disposal. It is not to set up government in the building of homes, but to stimulate individual endeavor and make community conditions propitious." — *From President's address.*

The traps and piping associated with plumbing fixtures were formerly boxed in with wood, because of the unattractive appearance of these accessories. In doing so, a splendid place was provided for vermin to accumulate and for slight leaks to pass unnoticed. The space so enclosed was usually damp and insanitary. Such a practice is no longer followed. The traps and piping in immediate connection with the fixtures are exposed to view and are so finely finished that they add to, rather than detract from, the general effect.

There is now a noticeable tendency to design fixtures so that the outlets allow waste water to be removed quickly, and bowls to be filled quickly without splashing. The speed at which the modern American lives demands a saving of moments, even when plumbing fixtures are being used in the home.

It has been constantly in the minds of those connected with the plumbing industry to produce fixtures more and more sanitary as time went on. Even the nerves of the user have been taken into consideration in attempting to make fixture operations silent instead of noisy.

It stands to reason that future developments of plumbing fixtures, plumbing design, and plumbing materials may not be so rapid in the future as they have been during the past fifty years. Accordingly, it is the opinion of the committee that plumbing fixtures, and plumbing systems, purchased and installed according to modern practice, will be acceptable twenty years from today, although it must be borne in mind that fashions in clothing, in homes, and in plumbing fixtures will continue to change.

Bathtubs have been gradually changed from wood tubs, lead lined, to copper lined, steel clad, to pressed pulp, to enameled iron tubs on legs, to acid-resisting enameled and solid porcelain tubs, built into floors and walls.

Wash basins have evolved from tin basins attached to wood slabs, through china basins attached to marble slabs, to enameled iron, solid porcelain and semi-vitreous and vitreous china; the latter representing the most highly developed product of today.

Water-closets have developed from long hoppers, used years ago, to short hoppers, then to pan closets, to plunger closets, to wash down, to siphon-action wash down, and, finally, to the most modern and ef-

(Continued on Page 110)

Research in the field of humidification has been carried on by Professor Kratz. His studies cover only the basic engineering factors. The illustration is typical of a class of equipment designed for home humidification

Humidification for Residences

. . A. P. KRATZ

CONSIDERABLE technical information is available regarding the standards of ventilation and the methods of maintaining such standards under specified conditions, but the sources of information are widespread and many of them are either unknown or unavailable to the average person interested only in improving the conditions within the home.

In view of the extended interest which has recently developed concerning humidification, the demand for some single source of information, easily available, has become urgent. The object in the preparation of this material has therefore been to consolidate certain useful information from various sources, and to present experimental results which have been obtained by the Engineering Experiment Station.

Humidity Requirements

Relative Humidity for Comfort.—The whole question of optimum comfort has recently come to be recognized as a matter of providing for the proper dissipation of the heat generated by the human body. If the surrounding environment is such that the rate of heat generation is not balanced by the rate of heat loss, the body must attempt to compensate by internal adjustments. The necessity for such adjustments results in a feeling of discomfort, which is rendered more or less acute, depending on how far the conditions depart from the possible range of internal adjustment. Thus, if the rate of heat loss is less than the rate of heat generation, or metabolic rate, a feeling of oppression, or "stuffiness" will ensue, which, if carried to the extreme, will result in collapse. Conversely, if the rate of heat loss is greater than the metabolic rate a feeling of chilliness will result.

It is true that unduly dry air will tend to dry out the mucous membranes in the nose and throat, thus causing some discomfort, and may result in somewhat decreased resistance to colds and infection. However, medical opinion does not seem to be entirely unanimous on this point, and the final criterion for proper humidification will probably be measured in terms of comfort rather

than in terms of pathological effects. At present, comfort seems to offer tangible standards of measurement.

The metabolic rate, or rate at which the body generates heat, is approximately 384 Btu. per hour at rest, according to the American Society of Heating and Ventilating Engineers Research Laboratory, and 610 Btu. per hour under conditions of more or less activity, according to Atwater and Benedict. For optimum comfort this rate must be equal to the rate at which the body loses heat. This loss is brought about by convection, radiation, and evaporation, all of which are determined by conditions

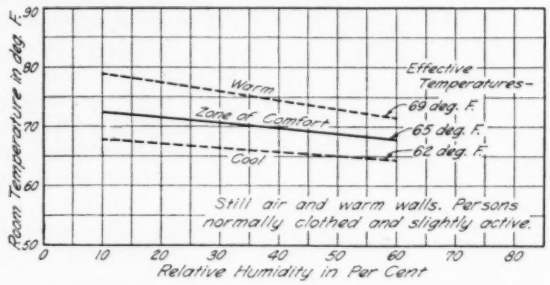


Fig. 1—This is known as the comfort chart. The effective temperature of 65 deg. Fahr. is produced when a condition exists such as a dry bulb temperature of approximately 69 deg. Fahr. and 40 per cent relative humidity

in the surrounding air and relative temperatures of the body and surrounding air and walls. In a given environment, the human body has practically no control over convection and radiation, except by slight changes in body temperature. Hence the major part of the adjustment must be made in the evaporation by furnishing more or less moisture to the skin in the form of perspiration. The greater the rate of evaporation, the greater the cooling effect becomes. This rate of evaporation depends on the dry-bulb temperature, commonly measured by means of a thermometer in the air, the relative humidity and the rate of air movement. Hence the whole problem of insuring optimum comfort resolves itself into one of providing proper conditions of dry-bulb temperature, relative humidity and air movement.

With constant air movement and too high relative humidity, the feeling of too great warmth is decreased by decreasing the dry-bulb temperature. With too low relative humidity a feeling of chilliness must be overcome by increasing the dry-bulb temperature. Also, with constant dry-bulb temperature and relative humidity, comfort may be controlled by varying the air movement; increasing the rate to increase cooling and decreasing it to decrease cooling effect.

In the average residence the conditions are such that the occupants are either at rest or under slight activity. Air motion is rarely as high as 50 ft. per min. Hence the control of comfort must be accomplished by maintaining the proper relation between dry-bulb temperature and relative humidity. Combinations of these two factors affording the same degree of comfort are said to produce the same *effective temperature*. Exhaustive tests by the Research Laboratory of the American Society of Heating and Ventilating Engineers proved that the majority of people, normally clothed and at rest, or under slight activity, require an effective temperature of approximately 65 deg. Fahr. in order to enjoy the maximum comfort.

The chart in Fig. 1 has been prepared from the published results of the study at the Research Laboratory of the American Society of Heating and Ventilating Engineers, and shows the various combinations of room temperature and relative humidity required to produce an effective temperature of 65 deg. Fahr., or the condition for optimum comfort. From this it may be noted that, for a relative humidity of 40 per cent, a dry-bulb, or room, temperature of 69.5 deg. Fahr. is required. If the relative humidity is only 20 per cent, which is representative of conditions in the average residence in

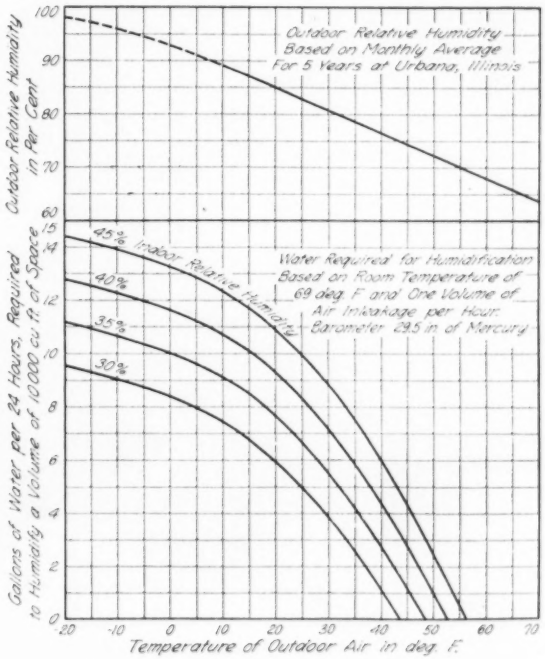


Fig. 2—These curves show the evaporative requirements for humidifiers. For instance, with an outside temperature of plus 20 deg. Fahr. and relative humidity of 85 per cent, in order to maintain an inside relative humidity of 40 per cent, in a volume of 10,000 cu. ft. of space, it is necessary to evaporate about 9¼ gallons of water every 24 hours. Certain assumptions are made for building construction

zero weather, a room temperature of 71.5 deg. Fahr. will be required. This chart also shows the limits above which all persons will feel too warm and below which too cool. The chart is applicable in all cases where the type of heating plant is such that most of the heat is supplied by convection, as in the average steam and hot water plant. The application is doubtful where the major part of the heat is supplied by direct radiation, as in the case of panel heating, or in the case of a number of direct electrical radiant heaters.

While considerations of comfort should probably be the controlling factor in determining the standard of humidification, other phases of the subject deserve some mention. Excessively dry air absorbs moisture from glue and fabrics, and the depreciation of furniture, rugs, and indoor trim subjected to such an atmosphere is much greater than where proper moisture is present. Furthermore, very dry air forms a good environment for the generation of static electricity which becomes evident by sparks discharged if the occupants walk across the rugs and touch grounded objects. This in itself is an

annoyance, and in addition it is not certain but that the possibility of static electrical charges on the surfaces of dust particles aid in keeping such particles afloat. Certainly fine dust particles are more easily produced by grinding dry material under-foot than in the case of materials with more absorbed moisture, and dry air will probably contain more dust than moist air. However, it is probable that an atmosphere conducive to comfort does not depart radically from that required for the preservation of furniture and the minimizing of static electricity and dust, and that the same means will accomplish both ends.

Evaporation Requirements

The consideration of the amount of water that has to be evaporated in order to produce given percentages of relative humidity involves an understanding of exactly what is meant by the term relative humidity, and why the evaporation must be more or less continuous in order to maintain a given percentage of relative humidity in a structure similar to a residence.

When the space occupied by a given weight of air contains all the water vapor it can hold the air is said to be saturated. This amount depends on the temperature of the air, and is very definite for any given air temperature. More water vapor is required to saturate warm air than cold. If the air is not saturated, the ratio of the weight of water vapor actually present to the weight of water vapor required to saturate it is defined as the relative humidity. This fraction is almost invariably expressed as a percentage.

Buildings are never absolutely air tight. Hence cold air constantly leaks in through cracks around the windows and doors on the windward sides and replaces the same weight of warm air that escapes through openings on the protected sides. If the air outside at zero deg. Fahr. is saturated, that which leaks into a building where the temperature is 70 deg. Fahr. will no longer be saturated at this higher temperature and will, therefore, have a relative humidity that is less than 100 per cent.

One pound of saturated air at zero deg. Fahr. actually contains 0.000781 lb. of water vapor. When this same pound of air leaks into the building, it still contains 0.000781 lb. of water vapor, but the temperature is now 70 deg. Fahr., and it could contain 0.01578 lb. if it were saturated at this temperature. The relative humidity would therefore be $\frac{0.000781 \times 100}{0.01578} = 4.95$ per cent.

Since the leakage of air is a more or less constant process, it is at once apparent that if a high relative humidity is to be maintained indoors, a continuous supply of water vapor must be added to replace that which is lost in the warm air escaping from the building, and that the amount necessary is the difference between the weights carried out by the warm air and in by the cold air. It is also evident that this required weight is governed by the actual weight of air inleakage in a given time, or in other words by the number of air changes per hour occurring in the building. Hence the evaporative requirements for a given residence are determined by the tightness of the structure as a whole, and particularly of the doors and windows. The air inleakage in the average non-weather-stripped residence ranges, in cold and windy weather, from one to three air changes per hour, and if the doors and windows are weather-stripped it may be as low as one-third of an air change per hour.

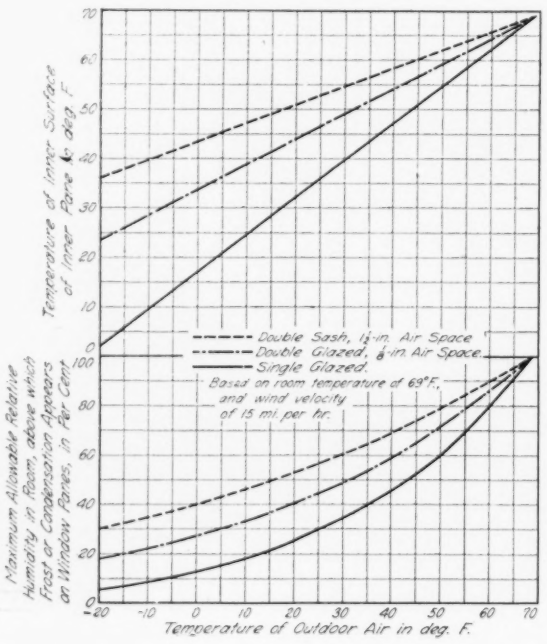


Fig. 3—Here are curves for glass surface temperatures and limiting values for relative humidity

The curves in Fig. 2 show the quantity of water that must be evaporated per 24 hours from all sources in order to maintain from 30 to 45 per cent relative humidity in a heated space of 10,000 cu. ft. when the outdoor temperature ranges from —20 to +70 deg. Fahr. These curves have been based on one air change per hour, as representative of average good construction, and a mean indoor temperature of 69 deg. Fahr., since the comfort chart in Fig. 1 shows a range of from 68.5 to 70.5 deg. Fahr. with relative humidities of from 30 to 50 per cent.

From the curves in Fig. 2 it may be noted that for a medium sized residence with a heated volume of 15,000 cu. ft., $11.6 \times 1.5 = 17.4$ gallons of water per 24 hours would be required from all sources to maintain 40 per cent relative humidity when the temperature outdoors was zero deg. Fahr. If the windows and doors were weather-stripped, or equipped with tight storm sash, this could probably be reduced to 5.8 gallons per 24 hours. In mild weather smaller amounts would be required.

Limitations on Relative Humidity

Glass Surface Temperature.—In the case of a partition separating a space containing warm air from one containing cold, the temperature of the surface of the partition exposed to the warm air is lower than that of the warm air itself. The greater the heat insulating value of the partition the more nearly the temperature of the inside surface will approach that of the air. Thus in the case of the average frame wall exposed to the weather, the temperature of the inside surface will range from 48 deg. Fahr. to 70 deg. Fahr. as the outdoor temperature varies from zero deg. Fahr. to 70 deg. Fahr.

(Continued on Page 116)

A Triple-Duty Heating Job

University of Nebraska has a plant which furnishes power as well as heat for the university buildings and the capitol a mile away

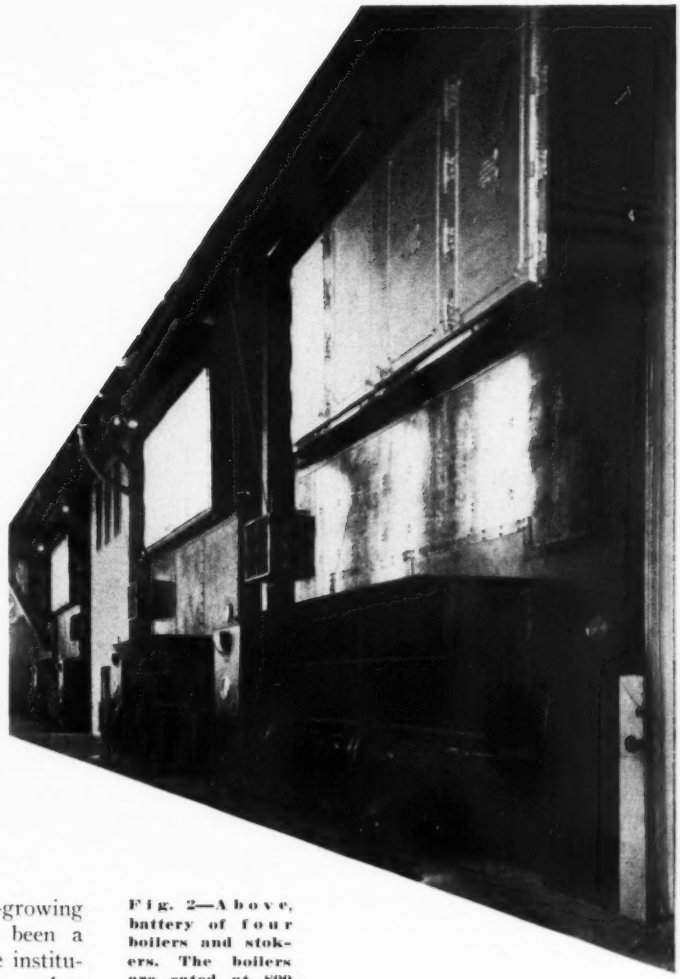
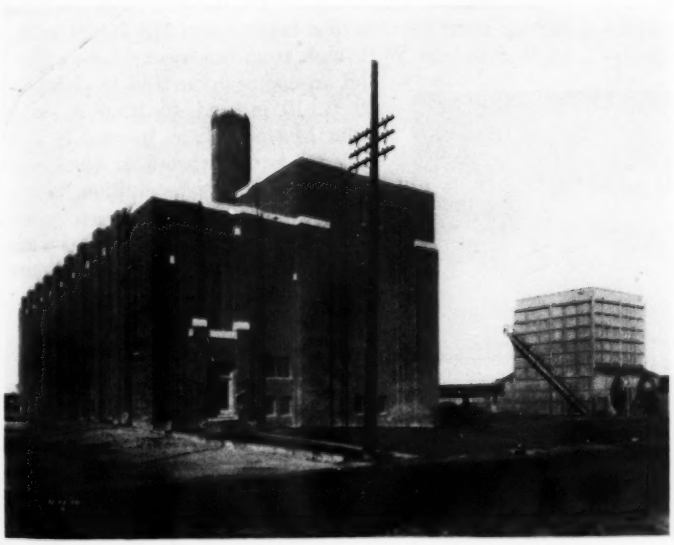


Fig. 2—Above, battery of four boilers and stokers. The boilers are rated at 800 hp.

Fig. 1—Below shows the exterior of the building containing the heating plant

THE problem of supplying heat for the fast-growing University of Nebraska at Lincoln has been a serious one to maintenance engineers at the institution up until last year. At the same time a rather serious heating problem had arisen at Nebraska's new capitol building which was heated temporarily from the heating plant of the old capitol building, the latter plant proving to be quite inadequate. A plan was evolved in 1928 to install a heating plant which would care for both the university and the capitol, the cost of the combined plant being estimated at $598,000.



In 1929 funds were appropriated for the combined plant by the state legislature. It so happened that the old heating plant at the capitol was in such bad condition that the necessity arose of providing heat for the building from some other source, while at the same time the engineers declared that the new heating plant could not be in readiness to serve the capitol that winter. The capitol is located approximately one mile from the university campus, and it was decided that if the heating main from the campus to the capitol could be installed, a connection could be made between the existing university plant,

thus taking care of the capitol building.

The heating main contracts were awarded immediately for $101,661 with Grant and Fulton, engineers of Lincoln, in supervision. The requirements which were found to exist included a total maximum demand for steam per hour of 153,000 lb. for both the university and the capitol; a normal boiler horsepower rating for a maximum hour of 5,100 b. hp.; an average boiler hp. of 1,300; a minimum boiler hp. of 700, and a maximum demand for electric power of 2,000 kw. The plant is a combined heating and power plant. The design of the plant and system was based upon these requirements.

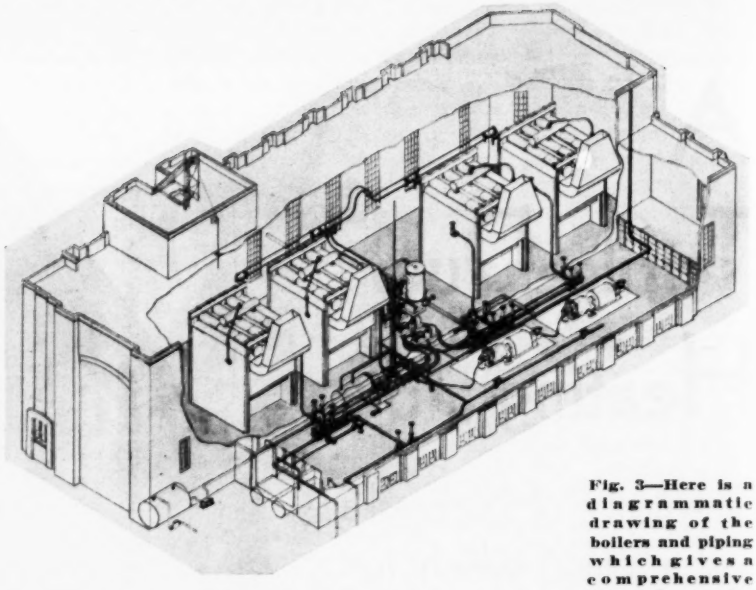


Fig. 3—Here is a diagrammatic drawing of the boilers and piping which gives a comprehensive idea as to the amount of work involved

All of the existing heating mains on the university grounds were carried in tunnels, and a part of this system could be used for the new plant. Additional tunnels were constructed, making a total of approximately 1,050 ft. of tunnel, 8 ft. wide by 7 ft. 4 in. high. The balance of the main was carried in conduit a distance of 3,665 ft. to the capitol building, while a small conduit also was run to the governor's mansion across the street from the huge edifice. Re-enforced concrete was used in building the tunnels, while the conduit was a concrete encasement enclosing the insulated heating main and return along with an electric power cable. The mains consist of 1,260 ft. of 10-in. main and a 4-in. return from the heating plant to the point where a branch high-pressure line extends to the university mechanical engineering building. From this point to the capitol, the line consists of 4,690 ft. of 8-in. main and 3-in. return.

The mains are extra heavy pipe with extra heavy expansion joints and fittings for use with 250 lb. pressure and 150 deg. superheat. The line was designed for a higher pressure than is needed at the present, in order that the capacity could be increased as future needs arise, simply by increasing the pressure.

The heating plant now runs in the winter-time on a 1½ to 2 per cent make up. The steam is run from the boilers into the turbines for generating electricity for light and power at 250 lb. pressure, and comes off at 25 lb. pressure. A valve maintains even pressure on the heat when the turbines are off, the heat passing through a by-pass and going on through the heating system. Each of the buildings served as a reducing valve which takes the steam at 25 lb. pressure and reduces it to about 1½ lb.

The engineer in charge of the plant, formerly started up his heat early each morning at the old university plant, but since the establishment of the new plant, he has run tests which prove that it is best to keep up the heat 24 hours of the day. The load factor on the boilers now runs about 100 per cent. Tests made for temperature also showed no undue heating effects on the cable for carrying electrical power which was carried in a fibre conduit in the concrete encasement enclosing the heating mains.

The building which houses the machinery of the new heating plant consists of a boiler room 188 ft. 10 in. by 48 ft. 4 in. and 59 ft. high from basement floor to roof, and an engine room 156 ft. 3 in. by 29 ft. 10 in. and 46 ft. 6 in. high from basement floor to roof. This building is constructed of brick and makes an attractive addition to the university campus.

The boiler plant consists of four 800 hp. boilers, three of which are

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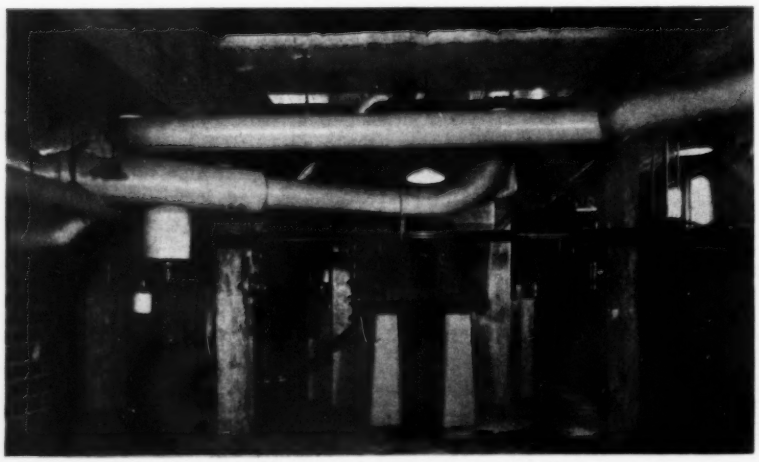
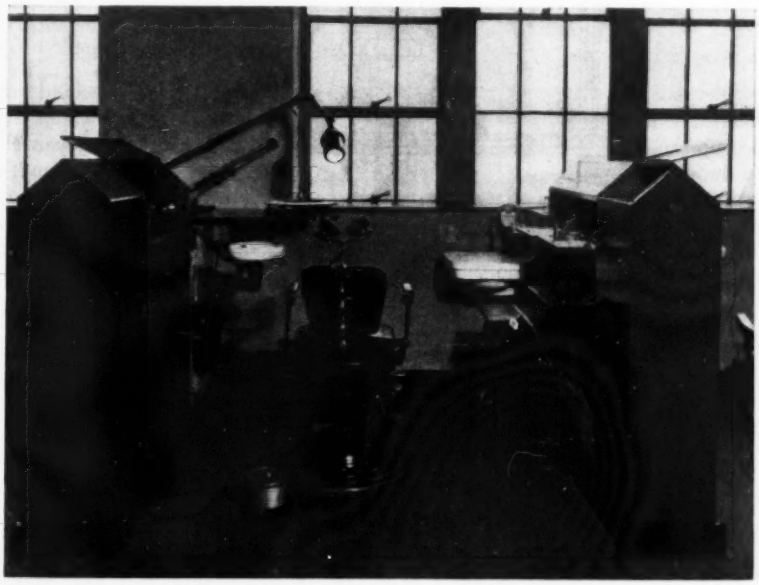


Fig. 4—This shows some of the piping and a condenser which reduces 250 lb. steam to steam at 25 lb. pressure for heating purposes after it has been used for driving electric turbines

The Relief Siphon Air Loop



Here is a dentist's office of the type which requires the installation of a relief siphon air loop for venting the lavatory shown at the right under the window

By R. M. STARBUCK

WE DOUBT that many of our readers will understand what a relief siphon air loop is.

It is a venting scheme applicable to lavatories located at the center of a room or considerably removed from a wall or partition. Such conditions often prevail in the case of lavatories in barber shops, beauty parlors, doctors' and dentists' offices, etc.

Recently we had the merits of this particular form of vent brought to our attention by a plumbing inspector in New Jersey, who is interested in seeing the relief siphon air loop adopted for the local plumbing code. He presented the method with the request that we comment on it. He offers this form of venting "For the installation of a lavatory in the front room on a first floor facing on a street, in an old or present building, for the purpose of a barber shop, beauty parlor or doctor's office, when there is no vent line within twenty-five feet of the fixture to be installed, or when for any reason it may be impracticable to comply with regular rules for venting."

We do not see, as far as any principle involved is concerned, that it matters at all whether the fixture is located in one room or another or on one floor or another. Therefore, for the purpose of our consideration in this article, we will not take up these features.

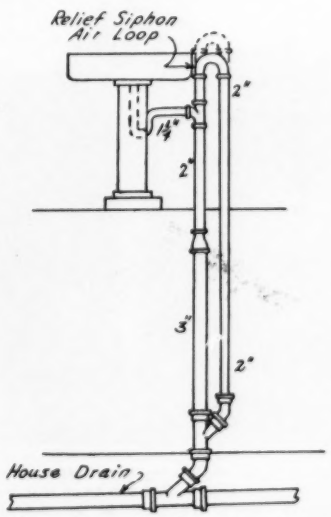


Fig. 1—The dotted lines show the correct height for the air loop

The sketch submitted with the inquiry is shown in Fig. 1. The loop shown by broken lines, however, is our own addition.

Before commenting on the merits of this form of vent, we want to point out a feature in Fig. 1 that should be changed. The loop rises only level with the top of the lavatory. As a consequence, if a stoppage should occur in the waste leg of the loop or in the trap, the waste would overflow through the vent side of the loop. It would therefore be better to run the loop slightly above the top of the fixture.

In considering the value of this method, it seems to us that if it is capable of supplying air, and thereby prevents siphonage of the trap, it fulfills its mission successfully and should be acceptable practice, even though it does not follow modern

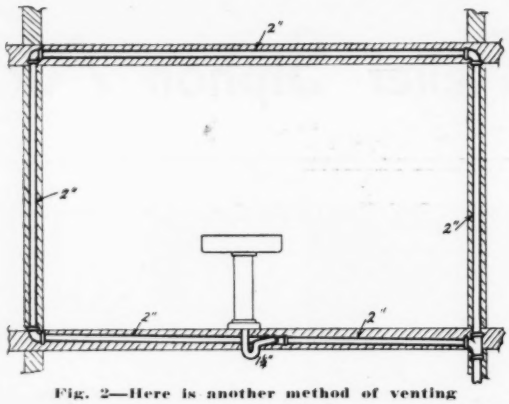


Fig. 2—Here is another method of venting

orthodox venting methods.

We believe the method will supply air to the trap and thereby perform the duties of a vent. However, it cannot do this as positively as the regular form of vent, and so should be used only when conditions prevent use of the common vent.

It will be noted that the trap is 1¼ in., increasing to 2 in. as it enters the vertical line, and increasing again, to 3 in. just below the floor. Our impression is that if the loop was made 2 in. throughout, it would work, but doubtless the increase to 3-in. helps.

As we look at it, increasing the size of the waste line each time breaks up the pull that the descending column of water might have on the trap, and allows air to escape up this pipe and past the waste. At the same time there is passage of air to the trap through the other side of the loop.

Comments from other readers on this form of vent would be very acceptable. The problem to which this method of venting applies is one that arises under other conditions than just those of the barber shop and beauty parlor. For instance, in a tall building, if such a fixture were required to be installed in the ordinary manner, it would necessitate the running of a special stack throughout the entire height of the building.

There are other conditions where such a vent would be very handy. Sometimes a one-story ell or addition could use the method to advantage and overcome the annoyance of throwing odors through a roof pipe into windows on floors above.

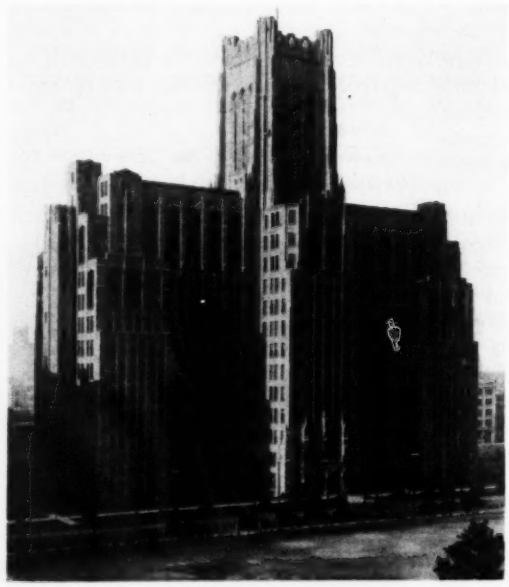
We have seen another method applied to these same general conditions, which in a way is similar in its operation. The method is illustrated in Fig. 2.

While an entirely different layout, the principle involved is not so different from that in Fig. 1.

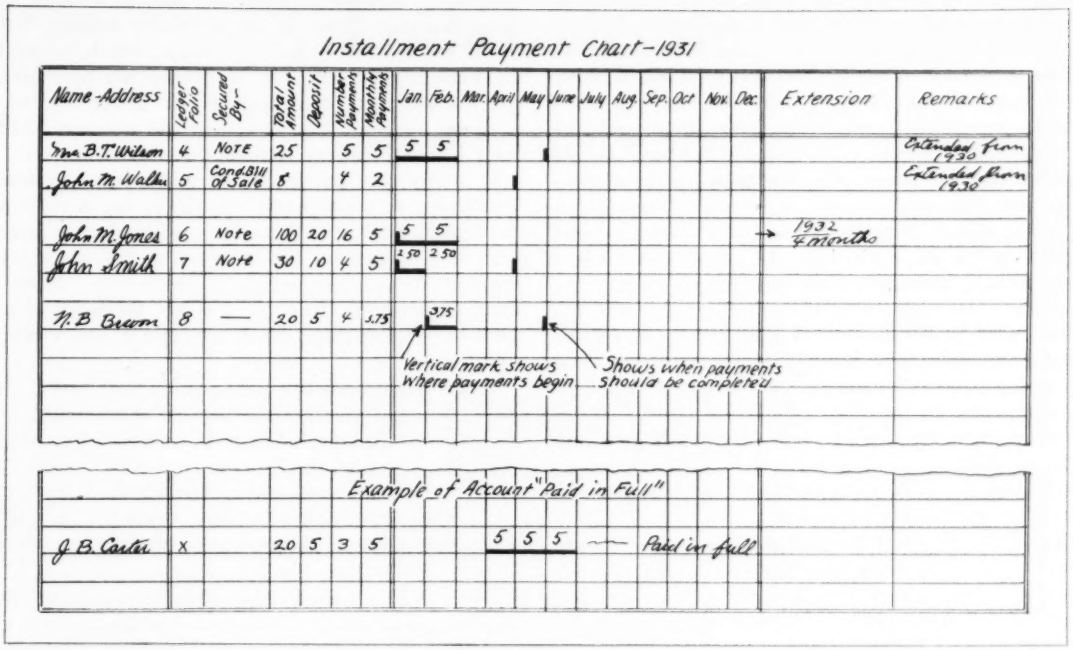
Air circulates through the four sides of this vent line, reaching the trap from either or both of two directions.

It does not seem that under these conditions there would be any possibility that the trap of the lavatory could siphon.

It is a case of a 1¼-in. pipe discharging into a 2-in. pipe. The discharge is made in such a manner that the waste enters the 2-in. line without commotion. This means that, as in circuit or loop venting, the horizontal line successfully carries in its upper part a supply of air for the protection of the trap against siphonage. It seems clear then, that air reaches the trap from both directions. The disadvantage that we see is having the trap so far from the fixture outlet. This leaves considerable foul waste pipe to throw off odors through the outlet, but inasmuch as very hot water is used in most of these fixtures, the difficulty is no doubt minimized.



The dentist's room shown in the photo on the preceding page is located in this building. In a tall building, if a single fixture were required to be installed in the ordinary manner, it would necessitate the running of a special stack the entire height of the building



An Installment Payment Chart

— a simple method for keeping a record of payments on deferred contracts

Issued as a Supplementary Bulletin of the Virginia Associated Plumbing and Heating Contractors Research Fellowship at Virginia Polytechnic Institute

THE following explanation of the Gantt Installment Payment Chart should prove valuable to those plumbing and heating contractors who are using the partial payment plan. The operation of the chart is very simple, and very little time is required to keep it up-to-date. The form of the chart can be varied to meet the needs of individual contractors, although the example illustrated will probably fit the average plumbing and heating business. Further information or assistance in adapting the chart to any business can be obtained by addressing the Dean of Engineering, Virginia Polytechnic Institute, Blacksburg, Va.

Advantages of the Chart

The chart described gives at a glance a clear picture of installment sales and collections, and the relationship between the two. It should aid contractors in securing loans based on installment accounts, as it can readily be understood by bankers. It should aid greatly in collections, for the delinquent account "sticks out like a sore thumb." The chart is posted from the ledger at the end of each month, and its use assures the contractor that his bookkeeper is keeping accounts accurately and efficiently.

The Form of the Chart

The chart may be laid off as illustrated on the accompanying model, and typed or mimeographed. Obviously, if it is desirable to include more information about the customer or the job, this can be placed in additional columns after the name and address. If sales are made on weekly payments, a column for each week in the year may be substituted for those representing the months as shown in the illustration. If weekly payments are used, it may be advisable to use two sheets for each year, with 26 weeks shown on each sheet, so that the chart may be kept down to a reasonable size. Thirty or forty accounts may be listed on a page. The forms should be kept in a binder so that they may be suitably protected.

Using the Chart

Suppose that we start off at the first of the year with a new chart. First we shall want to list all accounts carrying over from the previous year, noting them as "ex-

tensions." Let us assume that Mrs. B. T. Wilson still has five $5 payments to make, and that John M. Walker has four $2 payments left. We write these names in the lines as shown; in the Wilson line we make a heavy vertical mark at June 1st, to show that the payments should be completed by that time, while in the case of Mr. Walker the vertical mark is placed at May 1st, as he has but four payments left—one each for the months of January, February, March, and April. Then let us assume that during December of last year John M. Jones had $100 worth of work done, for which he made a deposit of $20, and agreed to pay $5 per month for 16 months. We make a vertical mark at January 1st, to show that payments are to start from that time. However, as there will be sixteen payments and our chart is for but twelve months, we show an *extension* of four months in the Extension column, so that we may know that the account will be carried for four months in 1932.

Assume that our ledger also shows that John Smith has bought $30 worth of material, for which he deposited $10 and agreed to pay $5 per month for four months. The vertical mark at May 1st shows that Mr. Smith's payments are to be complete by that time. Let us assume that these entries complete our record of installment selling for December, as shown by our ledger.

Payments on account are credited in the usual way—in our journal or day-book—during January, and after our ledger is posted at the end of the month we bring our chart up-to-date from the entries in the ledger Installment Accounts section. It is advisable to segregate these accounts in the ledger. We find that Mr. Jones has made his payment of $5, so in the January column of the chart we write "5," and draw a horizontal "bar" or heavy line extending to the February 1st line, which shows that his account is in a satisfactory condition at that time. Mr. John Smith has paid us but $2.50 instead of the expected $5 payment, so we write "2.50" in the January column after his name, and extend the "bar" only *half* through the space representing January.

At a glance we can see the condition of our installment accounts by noting the length of the "bars." If we are checking them on February 1st, all those accounts where the bars extend to the February 1st line are up-to-date, while those bars that are shorter represent delinquent accounts.

From our ledger for January, we also find that N. B. Brown has deposited $5 on a $20 sale, and has agreed to make four payments of $3.75 each. We start this account at the February 1st line by drawing our vertical mark, while the vertical mark we make at June 1st shows that the account should be paid in full by that time.

Let us assume that our ledger at the end of January also shows that Mrs. Wilson has paid her January installment of $5, while Mrs. Walker has failed to make a payment. A bar is drawn through January in the Wilson column, with the notation "5," while nothing is noted in the Walker column.

Suppose that our ledger at the close of February shows that Mrs. Wilson has paid her $5 installment during the month, but again no remittance has been received from Mr. Walker. Mrs. Wilson's bar is extended through February, with the "5" notation. We also find that Mr. Jones has paid his installment; his bar is also extended. Mr. John Smith has paid us another $2.50; this amount is noted in the February column, but the bar is extended only half a column, which brings it to the February 1st line. N. B. Brown has paid his February installment, according to our books, and his bar is drawn through February, and the notation "3.75" is made in the February column.

If at any time during March we wish to see how our installment accounts stand, we simply lay a ruler along the March 1st line. Those bars which do not reach the ruler are delinquent, the shorter the bar the more delinquent the account which it represents. Even with forty accounts on the page, it is but the work of a moment to pick out those which are behind, and which need attention.

When an account has been paid in full, and the horizontal bar has reached the vertical mark which shows the date of final payment, it is well to write "Paid in Full" at the end of the column, so that the unfilled space will not be considered as representing a delinquent account when subsequent checkups are made. An example of this procedure is shown below the chart in the accompanying illustration.

The columns immediately after the name and address spaces may be used to designate how the amount owing is secured, to show which type of work or equipment has been sold, or for any other information which may seem desirable.

The college will appreciate suggestions from plumbing and heating contractors concerning the types of research work which they most desire. Several projects relating to plumbing and heating merchandising are now under way. The research fellowship supported by the Virginia Associated Plumbing and Heating Contractors and the Virginia Plumbing and Heating Educational Committee has for its purpose the improvement of the industry, and it is the desire of the authorities at V. P. I. to make it as effective as possible. The college welcomes any business or engineering problems submitted to it, and will do everything it can toward assisting associations and individual contractors.

Inquiries addressed to the Dean of Engineering Virginia Polytechnic Institute, Blacksburg, Va., will be referred to the proper departments for consideration and study.

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Gage Inlets and Cocks

A connecting or gage cock should always be placed between the gage and the pipe threads. This will permit the removal of the gage without the necessity of shutting down the plant. The cock can be used to throttle down the pressure leading to a gage if the indicating pointer vibrates considerably. Dampening the movement of the pointer will make it easier to read and will prolong the life of the gage. Cocks on vacuum gages should be wide open.

Pressure gages subjected to heavy and violent shocks as on car washers, hydraulic presses, feed pump, and bilge pumps should be equipped with a restricted opening. The restricting hole is drilled about 0.02 in. or smaller, depending on the system and service requirements. This will remove shocks from the gage and help steady the movement of the pointer.

Toilet Room Ventilation

By

S. M. BARR

Fig. 1—A view showing the foul air ducts for ventilating a double battery of 15 water closets

WHO AMONG our readers hasn't had the nauseating experience of going into one of the unventilated, poorly lighted, ill-appointed men's toilet rooms in an old-time railroad station!

All that sort of thing has been absolutely done away with in the modern public toilet room.

Many things have combined to bring this wonderful transformation to pass —no one thing can be pointed out as the sole cause.

First and foremost perhaps in the list of causes is the fact that in the modern public toilet room little or no wood is used. Much of the vileness of the old-time room was due to the wooden floors, sheathing and wooden fixture partitions. Absorption, by all this wood, of the foulness of the old-time toilet room was a permanent cause of bad odors and this was accentuated by the occasional scrubbing the floor received.

The replacing of wood by tile and marble has wrought a wonderful improvement in public toilet rooms.

Fixture development is another outstanding cause of improved conditions. The reduction in the amount of fouling surfaces, of cracks and corners where filth may collect, the substitution of one-piece fixtures, etc., all have contributed to a more wholesome toilet room atmosphere.

The proper location of these toilet rooms enters into the proposition. Natural sunlight is a known destroyer of filth, and effective artificial lighting discloses foul conditions that under poor lighting more easily escape detection. It should not be overlooked that public demand for the very best in public toilet room comfort is probably the biggest factor of all. One big thing that this public demand has produced is constant and intelligent oversight and attention to maintenance details on the part of the building superintendent and his assistant.

One of the final factors that comes into our picture of public toilet room comfort is the matter of ventilation. We have left this factor for final mention, as it ties up to the one just previously mentioned, that of unremitting and intelligent supervision.

There is no form of mechanical ventilation that can be employed in large public toilet rooms that is foolproof, or that can operate for any long period of time without intelligent attention on the part of those who have this supervision as a part of their duties.

In Fig. 1 is shown a view looking through a long utility corridor between two batteries of seven and eight water closets, in which are carried two foul air ducts.

Raised rear vent water closets are used, and a branch is taken from each fixture into one of the two foul air ducts. In turn these two ducts connect into a still larger duct seen at the middle point of the corridor.

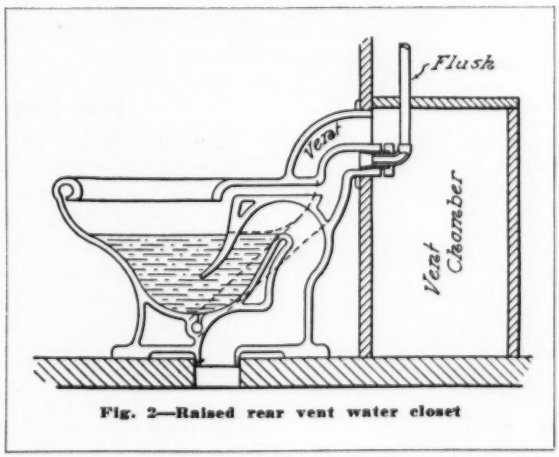

Fig. 2—Raised rear vent water closet

Odors pass from the fixture and into the foul air ducts directly, without mixing with the atmosphere of the room in their passage to the duct.

The only thing we know of that is against this system is the fact that it needs to be kept up. The one big point is to see to it that the fans are kept operating.

We put this question directly to the engineer who designed the toilet room

ventilator for this particular building: "What do you think of this kind of ventilation?" His answer was this: "There is only one point against it: it needs the attention of a mechanic who will see to it that it is kept operating."

For this reason we would not favor this type of ventilation for residence toilet rooms, or in any other place where it does not receive regular and intelligent attention. But for toilet rooms in buildings which have the services of paid workers whose duty it is to maintain the mechanical equipment of the building, we believe this to be an excellent type of toilet room ventilation.

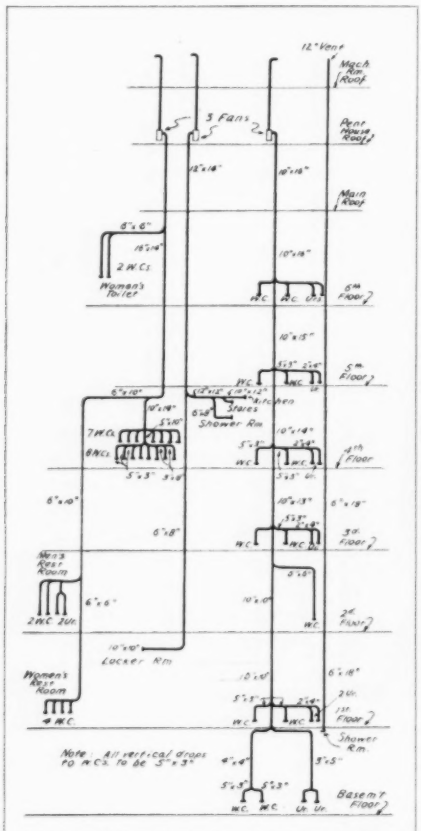

Fig. 3—Sizing of toilet room ventilating ducts in a six-story public building

The public building in which the ducts shown in Fig. 1 are located is served throughout with this type of ventilation.

The ventilation of the water closets is taken off the large raised rear vent, as seen in Fig. 2; the same method is applied also to the urinals, the connection being made from the hood of the fixture.

The vent size for individual water closets is 5 in. by 3 in., and 2 in. by 4 in. for urinals.

Fig. 3 shows the sizing of the toilet room foul air ducts for the building we are speaking of.

There are three principal lines which are exhausted by fans. Into these three lines are connected in addition to the toilet rooms, the locker room ducts on the first floor and the large kitchen on the fourth floor.

One of the excellent features of this special foul-air duct system is the long sweep turn that is used for each change in direction. The friction loss is greatly reduced in the use of such bends.

So far as we know, and we have been over all the toilet rooms of the building, the ventilation is as nearly perfect as it can be made.

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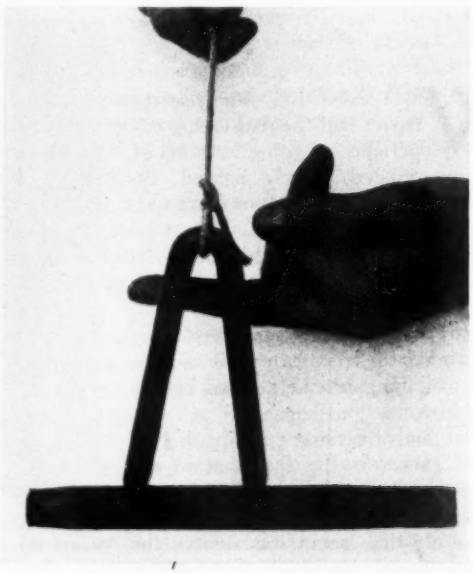
One is Always Handy

TOOLS are often accidentally dropped into tanks, down pipes, and in many other places where it is mighty hard to get at them. Recovering them easily and quickly with a magnet is by no means a new or unused trick, but it seems that there is never a magnet of any kind within miles of you when you are in trouble, and one



large and strong enough. Wait a minute. The flywheel magnets on a Model T Ford motor have a pull equal to that of an alderman, and the sun always shines on a place where you can get a suitable Model T engine. They are common and easy to get almost anywhere, new ones or old ones, when you stop to think. They are quite easy to remove from an old motor, and there is your magnet ready for the emergency. A number of them can be tied and used together if a single one is not strong enough. This little kink can often save the day.

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How Heat Affects Gages

Gages placed near extreme heat may become injured because of the oil in the movements becoming gummed, hindering the free action of the indicating pointers. When practical the gage should be attached some distance from boilers to a wall or column. The piping should be of ample size and the connection made direct from the steam chamber and not from the main.

All pipe connections leading to a steam gage should be steam tight, so that no steam will strike against the gage as it will work its way into the interior of the case and corrode the movement. Vacuum line piping connections must be tight to prevent the entry of air.

Principals and Principles

By GEORGE H. CHARLS

President, National Association of Flat Rolled Steel Manufacturers, Cleveland

THE men who stood fast when the Titanic was sinking while the women and children were saved, knew the transcendent power of righteous conduct in a crisis. The world thrilled as they lived and died in the exemplification of this code. In The Supreme Test, they did not pause to ask, "Am I my brother's keeper?"

The paramount need in this hour of perplexity and confusion is a few more men in executive capacity with the fear of God in their hearts, or whatever that unearthly influence is which inculcates a moral regard for the rights of others.

A Cardinal Principle

Fully conscious of the disturbing significance the thought will convey to many who hold that ideals are not even a by-product of business, and with due respect to such opinions, I venture to assert the belief that in the final reckoning, ethical rectitude will be a cardinal principle by which executive ability and business procedure will be judged by the public and the courts.

Co-operation is the only invulnerable bulwark business can erect in such a period as exists today. In any enduring co-operative effort, the principals of the industry must be imbued with those living principles of integrity which can surmount suspicion and distrust. They must both possess and inspire great faith if mutual respect and confidence is to exist.

Give and Take Policy

Co-operation implies a give-and-take policy. He who co-operates only to "take," refusing to yield an advantage for the sake and welfare of his industry in this emergency, even though he may profit by the misfortune of others, still will he remain a pauper as to the respect of those who have a true perspective of the real purposes of industrial co-operation.

Must Come from Within

Square shooting and a proper respect for the rights of others can find no substitutes in the compulsion of the law. These denote traits of character which unfortunately cannot be implanted by law. Such impulses must come from within, some natures must change.

Give business in its "Supreme Test" just a little of that spirit of righteousness which so harmoniously regenerates faith in human nature, and confidence will be re-established; a finer basis for unified action and interpretation of the law will be justified.

When all other authority for co-operative action seems inadequate, we still have The Authority of Rightness as a sound basis for procedure. Put such a code into effect in adjusting production with consumption and the tribulations of abstruse laws and senseless, devitalizing competition, will soon pass away and a brighter sun will shine.

This editorial is reprinted from the Daily Metal Trade **of Tuesday, Dec. 15, 1931**

Care and Protection of Enamel Finishes

"IS THE finish permanent?"
"How long will it last?"
"—and will it keep its luster, or become dull; perhaps even crack, chip or peel off?"

Nine chances out of ten a prospect will fire questions like these at the plumbing contractor just as a sale is about to be made—or lost. It is quite likely that the answers will have a bearing on whether the sale is consummated.

Of all times, this is the moment when the need is for simple and direct statements of fact by the plumber. Now, if ever, extravagant claims are entirely out of place.

"Yes ma'am, this finish will retain its brightness and will wear for years, *provided it is given the proper care.*"

So far so good—and true. But how many plumbing contractors pack the proper punch in the "provided it is given the proper care"? How many know definitely just what constitutes "the proper care," say, of enamelware finish and how such treatment compares with the proper care of the finish on vitreous china and that on plated brass fittings? And, knowing, how many plumbers pass on to the ultimate consumer such information as will insure the protection of the finish after it is in use?

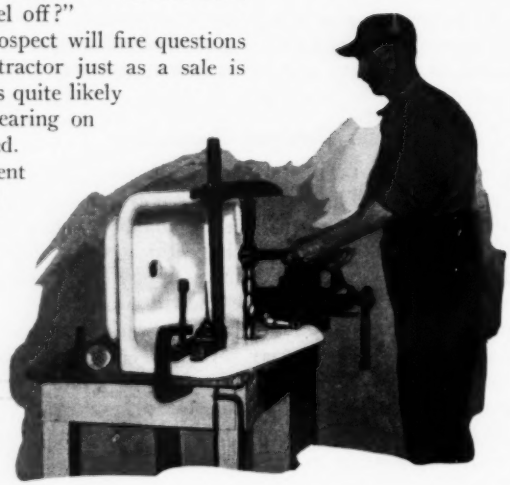


Fig. 1—Above—After the installation of fixtures, protect them with suitable coverings. Do not permit tools, fittings, paint cans, refuse, etc., to be placed in fixtures or allow them to be used for supporting scaffolding

Fig. 2—Left—Do not drill enameled ware. This should be done at the factory

Go back, then, another step and ask how many plumbing contractors realize the extreme importance of the proper handling of baths, lavatories, closets, kitchen sinks and other fixtures, as well as plumbing brass, during the installation period, while the plumber is responsible for them. Many accidents may—and do—happen to the various finishes, possibly due to a lack of understanding as to their characteristics, during the

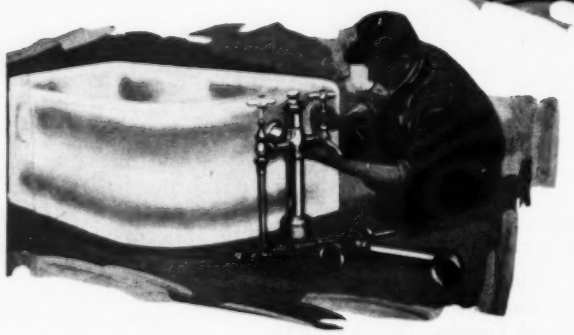


Fig. 3—Great care should be used in connecting fittings and in attaching legs, supports and the like. Undue strain may damage the enamel

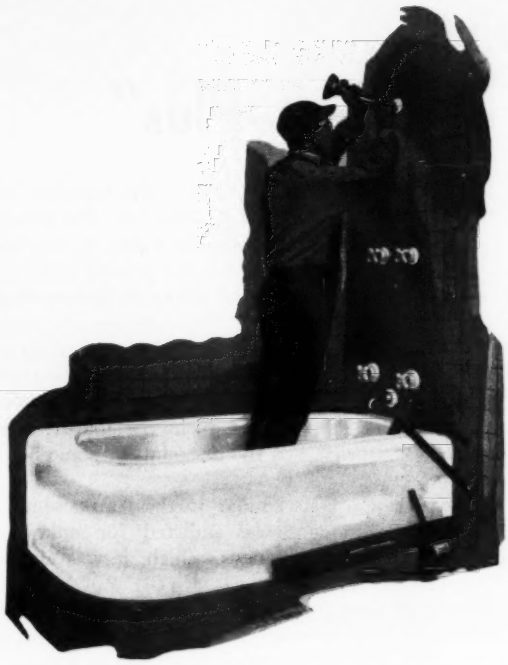


Fig. 4—Permit no one to stand in tubs or on sinks, lavatories or other enameled fixtures as this will scratch the surface due to sand, mortar and rough soles of shoes

time elapsing between arrival of the ware from the factory and the day the owner or tenant takes possession.

It is at least to minimize, if not to eliminate entirely, accidents to the finishes on plumbing fixtures or plumbing brass, that this article was prepared.

Two factors determine largely how long the finish on any fixture or any fitting will wear and also how long it will retain its factory-endowed beauty. These are:

The treatment of the ware during the installation period.

The care of the ware after it is in use.

Fig. 5—Extreme care must be used in cleaning the fixture after the job is completed. When removing paper from fixtures, wash it off carefully with water

Before the goods leave the manufacturer, every item is subjected to minute inspection. The various finishes receive special attention, for a single flaw in the finish is sufficient cause for rejecting an entire fixture.

Proper crating is the next step in the manufacturing process the purpose of which is to deliver the ware to the plumber in perfect condition. Most crates and boxes are designed especially to carry one particular object. They are sturdy enough to resist rough handling and heavy pieces rest within their crates on bumpers that absorb jolts and jars.

In addition, the larger crates, such as those for baths, have a trucking strip to facilitate easy handling.

Damage to the finish during shipment from the factory is a comparatively rare occurrence. Thus the ware is delivered to the plumbing contractor in good condition and from then until the time the house or building is turned over to the occupant, the full responsibility for the condition of the various finishes is the plumber's.

There are at least a dozen "Don'ts" to be observed in the handling and installation of enamelware and vitreous china, if the plumbing contractor cherishes any hope of protecting their respective finishes. The following might be cited as a few of them:

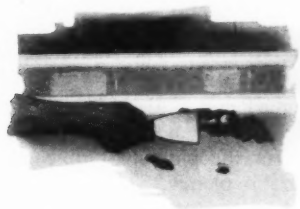
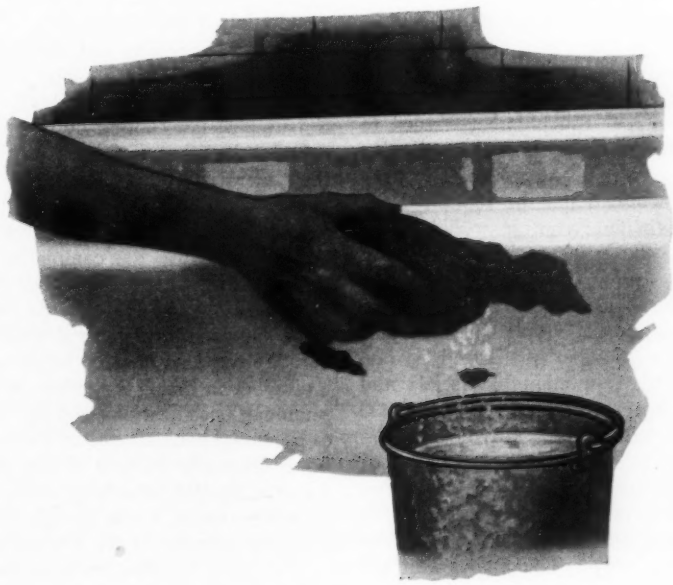


Fig. 6—Do not use a putty knife for removing paper or other items sticking to the finish



1. Don't drill the ware. This should be done at the factory.

2. Don't permit the ware to be used as a receptacle for tools, fittings, paint cans, refuse, etc., and don't permit the ware to be filled with wet excelsior, wet shavings, wet paper, wet burlap, etc., for these substances, in continuous contact with the ware, will spoil regular enamel finish.

(Continued on Page 107)

Jury Decides Meaning of "Cost-Plus"

AN INTERESTING and important case involving a New York plumbing contractor, was recently tried in New York county. The case involved a "cost plus" contract. A jury was asked to decide whether this phrase referred to list prices or to the actual prices paid by the master plumber. The general contractor had made a charge of grand larceny against the plumbing contractor.

The jury's verdict held that "cost plus" referred to the list prices. The case is an interesting one and the following is taken from a report published in *The Ladle* of New York City:

Last month in General Sessions Court of New York County, a case of great interest to the trade and to the business world in general was tried before Supreme Court Justice Harris, of Buffalo, sitting in General Sessions as visiting judge. The case was tried before the judge and a jury.

The defendant, who is a plumbing contractor, was charged with grand larceny in three indictments. The complaining witness was the general contractor on a construction job for the New York Central Railroad at Harmon-on-the-Hudson. The contractor entered into a general contract with the New York Central Railroad for the construction of one of the new railroad buildings at Harmon. The defendant's corporation was the successful bidder for the plumbing sub-contract which involved considerable money.

Extra Work Is Offered

After the completion of the contract work the general contractor requested a lump sum bid from the plumber for some extra work. The contract between the general contractor and the New York Central Railroad provided that in the event any extra work was required, a bid should be submitted to the New York Central engineers on the basis of "actual cost" plus ten per cent.

The plumber submitted the lump sum bid, which was rejected. Thereafter certain conversations took place between the general contractor and the plumber, and the general contractor testified that the plumber agreed to do the extra work on the basis of "actual cost" plus ten per cent overhead plus ten per cent profit. The complaining witness likewise testified that he requested the plumber to submit to the general contractor bills from the supply man showing the cost of the material, to which bill, in a regular requisition form, the plumber was to add ten per cent for labor and ten per cent for profit.

The complaining witness and the supplyman and other witnesses testified that the plumber purchased in one specific case, $4,000 worth of plumbing materials and received a bill from the jobber, which bill showed $4,000 as the list price of the merchandise. There was testimony that the jobber at the time of the purchase of the materials sent the plumber a bill showing list price, trade allowance or discount, and the net price and that the plumber thereafter requested the jobber to send him a bill showing the list price only. The jobber sent the plumber bill showing the list price only, together with five or six blank bills, on which blank bills the plumber made copies of the bills showing list prices of materials purchased and sent those copies to the general contractor and received as payment the list prices as shown on the bills.

The contention of the people in their prosecution was that the agreement to furnish bills in connection with requisition for payment showing "actual cost" meant the actual cost to the plumber from the jobber, which would be the list price, less the discount, or some $3,000 instead of $4,000.

For three transactions similar to the transaction just described, the defendant was indicted for unlawfully obtaining and retaining moneys, which, it was claimed, constituted, Grand Larceny.

The defendant was represented by Mr. Abraham Wilson, whose articles have appeared in *The Ladle* for the past two years, and the case took four days to try.

Plea of Defendant

Counsel for the defendant contended that the term cost or actual cost meant the cost of the materials to the general contractor, as if the general contractor were to purchase the materials himself. In other words, it was contended that the trade discount or allowance is a purely private transaction between a jobber and a master plumber by reason of a tacit understanding and custom in the trade.

Mr. Wilson called only two witnesses for the defense, not even putting the defendant on the stand. One witness was Herbert Smith, secretary of the Association, who testified that trade allowances or discounts were usual in connection with purchases of materials by a plumber from a jobber. A representative from a jobbing house testified to the existence of such a custom from the standpoint of the jobber.

After Mr. Smith and the jobber had testified, Mr. Wilson rested his case. The jury after three hours, returned to ask the Court whether the defendant was, as a matter of law, bound by the provisions of the general contract between the New York Central Railroad and the general contractor.

Mr. Wilson had maintained throughout the case that the general contract had no application to the charges in the case, because the complaining witness relied on an oral contract with the plumber for the extra work, and that therefore the oral contract superseded any arrangement between the general contractor and the owner. Mr. Wilson also insisted in his address to the jury that a plumber in taking a job was primarily interested in the plumbing specifications and not in the general provisions of a general contract not affecting the plumbing specifications, especially in view of the fact that the sub-contract for the regular plumbing work did not contain a provision for extra work, though it did contain a provision that the plumber took his contract subject to all the

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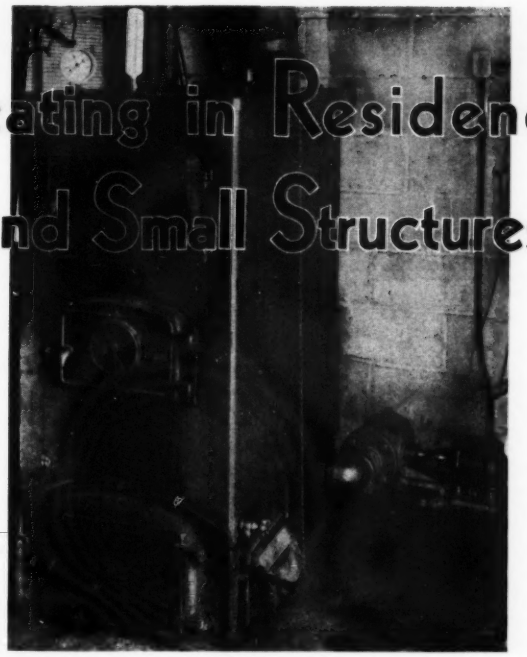
Heating in Residences and Small Structures



In this, the sixth of H. L. Alt's new heating series, he gives careful and thorough treatment to outstanding points of Hot Water Circulating Systems

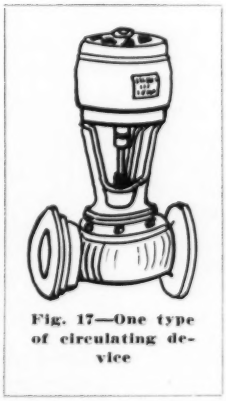


Fig. 17—One type of circulating device

HOT water circulating systems have a few inherent disadvantages which largely are due to the use of water as the heating medium. One of these is the time required to raise and lower the water temperature to correspond with the demands for heat as determined by the outside temperature. Another is the small amount of motive power available to circulate the water especially on the so-called open systems where the water cannot even approach the boiling point without the danger of generating steam in the system. Various efforts have been made from time to time to overcome or lessen these difficulties. This is evidenced by the closed systems, the pressure devices which have been put on the market, and other items which have as their object the speeding up of the action of hot water and a better control of its temperature.

Hot Water Circulators

One of the newer ideas along this line is embodied in the little electric device which is nothing but a propeller set in the hot water line at some desirable point and so arranged as to keep the hot water in motion at all times when it is so desired. These devices should not be confused with the forced circulation systems of hot water heating which are used in very large installations especially where the building or buildings cover a large area without a great deal of height. There are several advantages claimed for these circulators among which might be mentioned an increased efficiency in the boiler due to the more rapid movement of water through the boiler and across the heating surfaces; a fuel saving because it is possible to set up a complete circulation throughout the system without heating all the water

contained therein as is required when straight gravity circulation is depended upon; the possible use of smaller sizes of pipe in some instances, and the possibility of making a direct pressure hot water system out of the installation using steam sizes of radiators. This is, perhaps, a great deal to expect out of one small propeller,

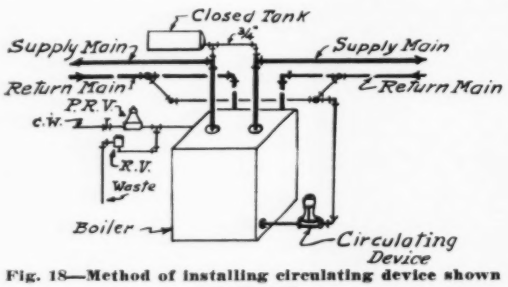


Fig. 18—Method of installing circulating device shown in Fig. 17

but careful consideration of the facts seems to bear out the claims as being based on solid engineering principles. For example, a rapid movement of water in the system makes it unnecessary to heat all the water in the system before full circulation results are obtained; the rotating of the water without depending on temperature means good circulation even on mild days when the ordinary gravity system is losing all of its motive force as the temperature falls, and the rapid movement through the radiators makes a large temperature drop there unnecessary so that the radiator surface is at higher average temperature than when gravity movement is depended on.

Standard Sizes of Circulating Devices

The devices of this nature which are on the market today and which have been in use for some time vary with the different manufacturers; this applies to the sizes produced, ratings, horsepower of the motors and other features. As a concrete example of an actual case let the device illustrated in Fig. 17 be considered; this consists of a small impeller mounted on the shaft of a vertical motor and hung in a cast iron casing resembling a centrifugal pump casing. The data concerning this device is given in Table IX, the ratings running from 1,000 sq. ft. of hot water radiation to 6,000 sq. ft. Larger capacities can be obtained if desired. The recommended method of installing is on the return line near the boiler as illustrated in Fig. 18.

TABLE IX
Standard Sizes of Circulating Devices as Made by One Manufacturer

No.	Tapping	Motor H.P.	G.P.M.	Capacity Sq. Ft. Rad.	W x H x L In. In. In.
15	1½ in. (Scrd.)	1/10	15	1,000	7½x17 x 7
22	2 in. (Flgd.)	1/8	30	2,500	7½x19½x 9⅝
23	3 in. (Flgd.)	1/4	70	6,000	8½x21¼x13¾

TABLE X
Data on a Second Type of Hot Water Circulating Device

No.	Pipe Size, In.	Gallons per Hr.	Gallons per Min.
1½	¾ to 1½	650	11
2½	2 to 2½	1400	23
4	3 to 4	9500	160
6	5 to 6	16000	266
8	8	35000	580
10	10	62000	1030
12	12	77000	1280
16	16	140000	2330

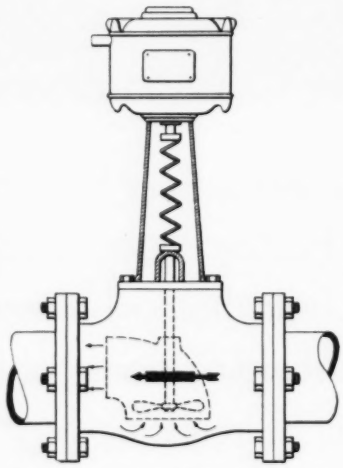


Fig. 19—A second type of circulating device

Another design is illustrated in Fig. 19 where a flanged fitting is provided and an ell inserted inside of which ell is located the propeller. The idea back of this design is that the system will circulate by gravity as long as possible only calling for the expenditure of electric power when absolutely necessary. A flexible connection is used between the motor and the pump and the result of driving the water out of the end of the impeller elbow is to produce a sort of injector action so that the impeller itself only handles a small portion of the water actually circulated. This device is made in sizes running from 1½ in. to 16 in., and is rated—as far as the capacity is concerned—in gallons of water circulated per minute. The ratings and standard sizes together with some other data is given in Table X.

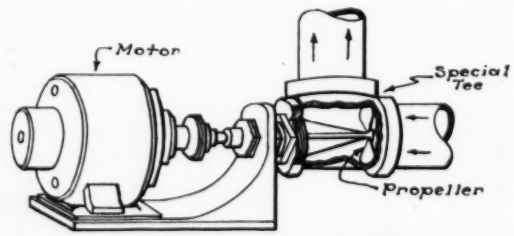


Fig. 20—A third type of circulating device

A third type of this device is shown in Fig. 20, this utilizing a tee in one end of which a plug is screwed and the motor shaft is taken into the fitting through the plug. The propeller is mounted on the end of the extended motor shaft so as to bring the propeller just ahead of the point where the water starts to turn and pass out of the side outlet of the tee. These are made in sizes ranging from 1½ in. to 12 in., and larger if desired; data concerning this particular type is given

in Table XI and it will be noted that the ratings are in gallons per hour. This apparatus also is made in what is known as the high pressure type, which produces an unusually high circulation head in the system, the comparison between the so-called standard type and the high pressure type being shown on the capacity curves given in Fig. 21.

Application to a Filling Station Heating System

As a concrete illustration of the application of such devices let a heating system worked out for a small filling station be considered. These layouts—shown in Figs. 22 and 23—were comparative arrangements made so the owner could see just what the benefits of the device would be in the installation of the plant. In the first layout, Fig. 22, the radiators and piping were designed for the common variety of gravity hot water heating with radiators sized on the basis of emitting 150 Btu. per hour per sq. ft. of nominal rating. It will be noted that on this basis the greasing room was provided with two radiators, one of which was 130 sq. ft. and the other 180 sq. ft. The supply was run across on the ceiling, dropped down to the 130 sq. ft. radiator and the return was carried back under the floor in terra cotta pipe to a point where it could enter the depressed boiler room floor.

In the attendant's room a 94.5 sq. ft. radiator was proposed while in the men's toilet, a 16.5 sq. ft. radiator and in the women's toilet a 28.8 sq. ft. radiator was contemplated. High up in the boiler room the customary expansion tank with its circulation pipes, overflow and cold water supply was to have been located. This makes the total radiation as follows:

Greasing Room	310	sq. ft.
Attendant's Room	94.5	
Men's Toilet	16.5	
Women's Toilet	28.8	
Total Radiation	449.8	sq. ft.

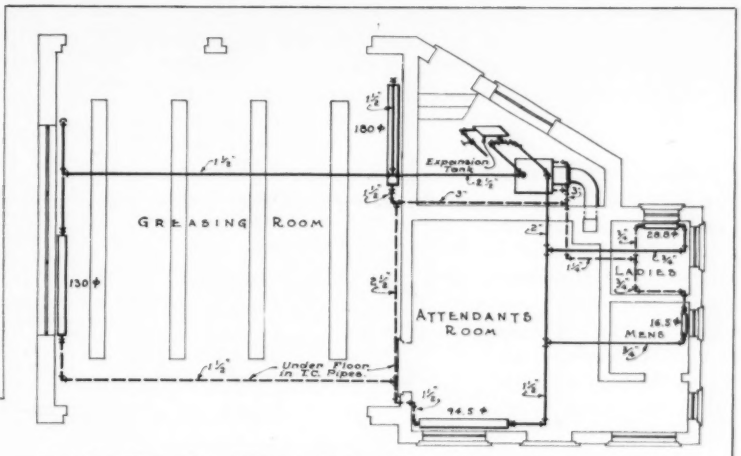


Fig. 22—Plan of a filling station with heating system arranged for gravity hot water circulation

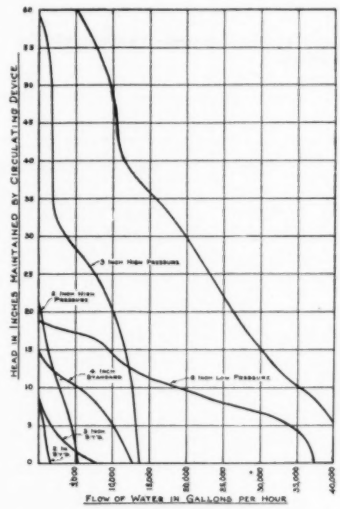


Fig. 21—Curves showing comparison between the standard type of circulator and the high pressure circulating device

The mains leaving the boiler consisted of two supply lines, one of 2 in. size and one of 2½ in. size, while the returns all united into one 3-in. main return which split into two branches where connected up to the boiler return tappings. The boiler was a No. 2-GA-7 gas boiler.

Installation Changes with a Circulating Device

Referring now to Fig. 23, it will be seen that the use of a circulating device combined with a direct pressure supply and a pressure regulator resulted in the radiators in the greasing room being cut down to one of 78 sq. ft. and one of 108 sq. ft. while in the attendant's room the radiator was reduced to 59.5 sq. ft. and in the toilets to 9.9 sq. ft. and 17.3 sq. ft. This makes the total radiation as follows:

Greasing Room	186	sq. ft.
Attendant's Room	59.5	
Men's Toilet	9.9	
Women's Toilet	17.3	
Total Radiation	272.7	sq. ft.

TABLE XI

Data on a Third Type of Circulating Device for Hot Water Heating Systems

Nominal Size of Pipe In. Diam.	Size of Tee In.	Size of Plug In. Diam.	Motor H.P.	Capacity G.P.H.
1½	1½	1½	1/20	500
2	2 x1½x2	1½	1/20	800
2½	2½x ½x1½	1½	1/20	1450
3	3 x2 x3	2	1/20	2700
3½	3½x2 x3½	2	1/10	5120
4	4 x3 x4	3	1/6	8250
5	5 x3 x5	3	1/6	13500
6	6	3	1/4	16500
7	7	3	1/2	20000
8	8	3	1/2	27500
10	10	x	3/4	48500
12	12	x	1	76000

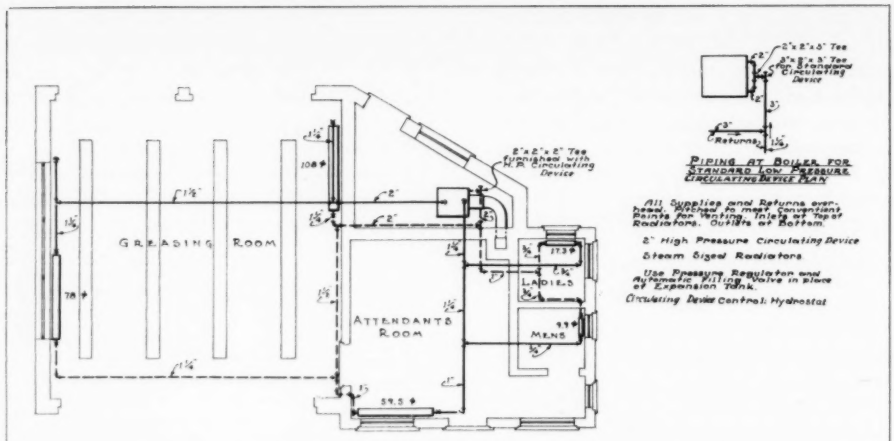


Fig. 23—Plan of the same filling station with the changes in the heating which could be made with the use of a circulator

Owing to the fact that in the second scheme the radiators could be raised to steam temperature in extreme weather without boiling the water, and also to the fact that the pump circulated the water so fast as to make all of the radiator surfaces practically the same temperature, it was possible to consider the radiation from these radiators the same as that which would be received from steam radiators of equal size. This gives

272.7 sq. ft. x 240 Btu. or 65,448 Btu.

while with the gravity system taken at 150 Btu. per sq. ft. in accordance with customary practice the heat emission would be

449.8 sq. ft. x 150 Btu. or 67,470 Btu.

or very nearly the same amount of heat.

It was also unnecessary to go to the expense of the underground line for the return on the greasing room radiators and the depressed boiler room floor likewise was omitted. The expansion tank and the piping connections for same were eliminated. Besides this the pipe sizes were reduced on the supply main from one 2-in. and one 2½-in., to one 1¼-in., and one 2-in., while the main return was reduced from 3-in. to 2-in. size pipe. Branches were made proportionately smaller and taking the job as a whole, a considerable saving was effected. Naturally there was no change in the boiler size as the boiler had to supply practically the same amount of heat in both cases.

The reduction in pipe sizes has been scheduled in a convenient manner in the following, as well as the sizes which would have been used for ordinary gravity work according to Tables V and VI, assuming the radiators are set 5 ft. above the boiler.

Radiation or Radiator in Square Feet	Pipe from Table VI	Factor from Table V	Size Pipe Used	Size of Pipe with Circulating Device
180	1½	30	1½	1¼
130	1½	30	1½	1¼
94.5	1¼	20	1½	1
28.8	¾	5	¾	¾
16.5	¾	5	¾	¾
——	By Factor	—		
449.8	2½	90	3	2
180		30		
130		30		
——		—		
310	2	60	2½	2

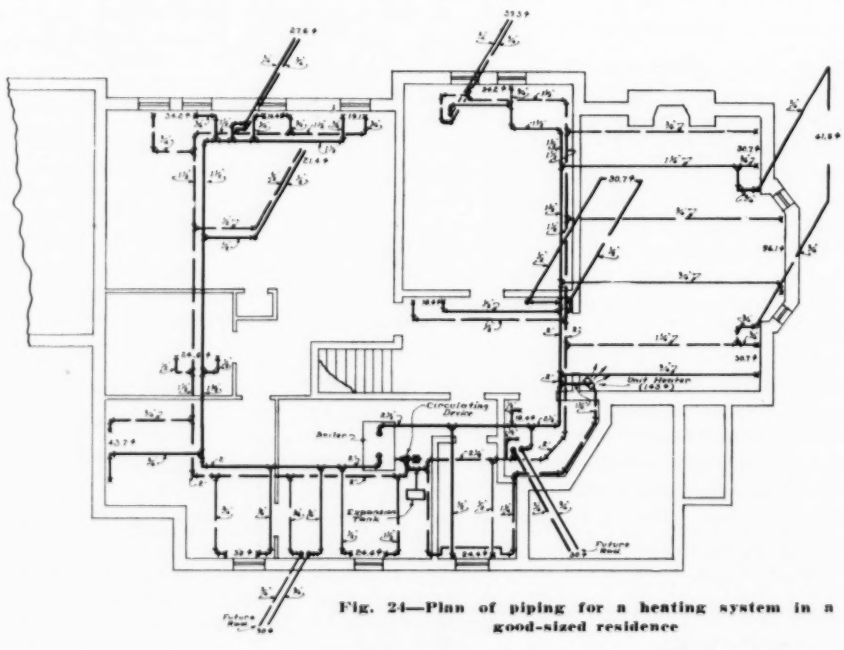


Fig. 24—Plan of piping for a heating system in a good-sized residence

Radiation or Radiator in Square Feet	Pipe from Table VI	Factor from Table V	Size Pipe Used	Size of Pipe with Circulating Device
94.5		20		
28.8		5		
16.5		5		
—		—		
139.8	1½	30	2	1¼
94.5		20		
16.5		5		
—		—		
111.0	1½	25	1½	1¼
130		30		
94.5		20		
—		—		
224.5	2	50	2½	1½
180		30		
130		30		
94.5		20		
—		—		
404.5	2½	80	3	2

A study of this comparison shows that the pipe sizes contemplated for the gravity system undoubtedly are a little larger than would be required with the center of the radiation fully 5 ft. above the center line of the boiler and this was done no doubt because this 5 ft. was not quite obtained with the distance that the boiler room was depressed. It will be noted that even had the boiler been depressed so as to give the full 5 ft. and had the sizes been as shown in column two, the circulating device still would have made a saving on pipe sizes as indicated in the last column.

The manufacturer of the device shown in Fig. 19 has developed a schedule of valve sizes for hot water heating systems on which his circulating devices are to be installed, this consisting of the following:

First Floor Up to 24 sq. ft..... ½-in. valve
24 to 60 sq. ft..... ¾-in. valve
60 to 100 sq. ft.....1 -in. valve
Over 100 sq. ft.....1¼-in. valve

Second Floor Up to 30 sq. ft..... ½-in. valve
30 to 100 sq. ft..... ¾-in. valve
Over 100 sq. ft.....1 -in. valve

Third Floor Up to 35 sq. ft..... ½-in. valve
35 to 120 sq. ft..... ¾-in. valve
Over 120 sq. ft.....1 -in. valve

The layout of a good sized residence as far as the heating system piping is concerned is shown in Fig. 23-A this being a cellar plan with all the horizontal pipes and risers indicated thereon. This manufacturer states that the risers are made in accordance with the valve sizes as indicated on the above schedule and that the mains are proportioned according to the radiator valves supplied. The cut illustrates this same type of circulator installed on another job which space limitations prevent being described herein.

Comparison of Circulator Pipe Sizing for Residence

A check-up on the method of pipe sizing used in Fig. 24 is very enlightening as to the method pursued in determining the pipe sizes for an installation of this character. In the first place there are two radiators located in an unfinished second floor bedroom which are piped for, but the actual radiators are not installed; in the second place there is a unit heater in the large room in the cellar which unit heater may have a load equal to about 143 sq. ft. of equivalent hot water radiation at 150 Btu. per sq. ft. For the two future radiators it will be assumed that these will be about 30 sq. ft. each.

Based on the valve sizes used by this manufacturer on systems using his circulating devices and which just have been quoted the loop around the front of the cellar shows up as follows:

Radiation	Valve Size	Riser and Runout	*Factor	Pipe Size	Size Used
39.3	¾*	¾	5	¾	¾
34.2	¾	¾	5	¾	¾
—			—		
73.5			10	1	1½
41.5	¾	¾	5	¾	¾
30.7	¾	¾	5	¾	¾
—			—		
72.2			10	1	1¼
145.7			20	1¼	1½
56.1	¾	¾	5	¾	¾
—			—		
201.8			25	1½	1½
30.7	¾	¾	5	¾	½
—			—		
232.5			30	1½	1½
18.4	½	½	2	½	½
—			—		
250.9			32	1½	2
30.7	¾	¾	5	¾	¾
—			—		
281.6			37	2	2
143.0	1¼	1¼	20	1¼	1¼
—			—		
424.6			57	2	2
30.0	¾	¾	5	¾	¾
—			—		
454.6			62	2½	2½
18.4	½	½	2	½	½
—			—		
473.0			64	2½	2½
24.4	¾	¾	5	¾	½
—			—		
497.4			69	2½	2½

*Note—The factors used above are obtained from Table V.

This indicates a very close following of the schedule except that the main is increased a little at the far end apparently with the idea of favoring the farthest radiators if possible. This is a very wise practice and is liable to help out the matter of short circuiting through the nearer radiators due to the higher friction which would be developed in the longer runs of main if the enlarging of the far ends were not done. The loop running around the rear of the cellar checks up in a very similar manner as will be noted in the following:

(Continued on Page 117)

RETAIL ADVERTISING SERVICE

THERE are people who have money, but are holding on to it. The merchandiser must give good reasons for spending—and we believe the appeal—spend on the home—is the most powerful that can be used at this time. The ads on this page will apply equally well to plumbing and heating.

Spend for the Home in 1932

NO DOUBT it is a time to examine expenditures carefully. But money that is spent on the home is money invested in more comfortable living, in a happier and more contented family life, and in actual returns when the property is either rented or sold. We have specialized in adding to older homes the most up-to-date comforts in plumbing. It will cost you nothing to discuss the subject with us—just phone and we'll send a man to go over the idea with you.

(In this space Your Name, Etc.)

For one-column space

Spend for the Home in 1932

Money spent in the home is money invested. While it may be well to examine expenditures critically, now is the time to secure the greatest values in recent years in plumbing (or heating) refinements for the home. And once these improvements are made they pay dividends far in excess of their cost. They add to sale and rental values. You would be interested in hearing the results of some remodeling jobs we've undertaken. Just telephone—a member of the firm will be glad to meet you here, or in your home, at any time convenient to you.

(In this space Your Name, Etc.)

A two-column newspaper ad

Dear Sir:

As you plan your 1932 expenditures, we have a suggestion we should like to have you bear in mind.

For a number of reasons, we believe the difficult times we have been going through are going to throw all of us more and more back upon our homes and our home life.

And that means that the more comfort and the more convenience there is in the home, the more contented we'll all be with a little simpler life than we've been living for several years.

No one desires to hoard -- and on the other hand, no one desires to spend in ways, that, while they may mean more business, actually will not be investments in any sense of the word.

Money spent on the home is an investment, no matter how it is viewed. It adds to comfort, convenience and, often, to economy of living. It adds to the value of property for rental or sale purposes.

While we are interested in plumbing modernization, we are not limiting this letter to that subject. We are writing it in the interests of what we believe will lead to the quickest and soundest recovery of business -- spending for the home in 1932.

Very truly yours,
HARRY BROWN

A plumbing sales letter

The copy on these two pages is for the use of readers of DOMESTIC ENGINEERING —without charge. If you wish to use the illustrations, they are sold at $4.20 for twelve —three months' service.

If you are using any of this copy, send us samples. We like to keep in touch with what our readers are doing.

"SPEND ON THE HOME" ADVISES LOCAL MERCHANT

"The building industry stands second in importance in this country," says Harry Brown, local plumbing and heating contractor. "Bring it out of the doldrums, and you will bring the country into new prosperity. It affects, directly and indirectly, over fifty other industries.

"The recommendation to 'spend on the home in 1932' is, I believe, a sound one, because I know of no way in which a man may spend his money more sanely. I think that conditions are going to throw us back more and more on our homes and our home life. Anything which can add to the comfort, convenience, health and economy of home life is good spending—is, in fact, an investment."

Hand this publicity item to your newspaper

Automatic Heat

In many sections, the winter is developing into an "open one." At any rate, heat in mild weather is a problem to be solved only by controlled, automatic heating equipment. The copy on this page treats of this subject.

A two-column newspaper ad

When It's 50° Outside How About Inside the Home?

When the temperature rises to 50 degrees outside, how warm is it in your home? In many homes, it is too warm, because the heating plant goes on producing just as if it were at freezing temperature outside. That means not only discomfort and possible colds—it means shameful waste of fuel. With modern automatic heat, you control the temperature within the house in accordance with the temperature without. If you need 20 degrees to bring the house to the proper warmth, that's what you get. You save fuel, you eliminate discomfort, and you do away with the danger of colds that come from overheating. Phone—let us explain.

(In this space Your Name, Etc.)

Mild Heat for Mild Weather

WHEN it's mild outside, you need only mild heat inside. But if you have an old-fashioned heating plant it goes right on producing as if it were freezing outside. That means a waste of fuel —not to mention discomfort and the colds that come from overheated rooms. We have specialized in controlled, automatic heat, with which you get just enough warmth to bring your house to the right temperature. Let us explain how your heating system may be controlled, automatically—no matter what fuel you burn. Just telephone.

(In this space Your Name, Etc.)

A single column ad

MILD WEATHER MAY BE UNHEALTHY WEATHER

"When I say that mild weather may be unhealthy weather," says Harry Brown, local heating contractor, "I mean that in mild weather many homes are overheated. They have old-fashioned heating plants that go right on producing a lot of heat, regardless of whether it's needed or not.

"When the temperature outside rises to, say, fifty degrees, you need only add about twenty degrees to make the home comfortable. If you add thirty, it is no longer comfortable. Windows are opened—and someone may catch cold. Not to mention that the fuel that produces ten degrees of heat that isn't needed is wasted. Modern, automatic, controlled heating systems give you just what you need—no more, no less."

Give this publicity item to your local newspapers

Your Window

Window displays need change. If you have a permanent display of fixtures and equipment, make changes in lighting—use the free floor space for changed displays of accessories. Property owners who pass your window will never be particularly drawn to it if it remains the same in every detail for months at a time. Change—even small changes —is what draws attention to a window.

Dear Sir:

When you pay your coal bills -- especially after a month of mild weather, don't you often wonder why the difference in the weather doesn't show up in fuel costs?

It's because an uncontrolled heating plant goes right on producing heat -- and when it gets mild, it may be producing from ten to twenty more degrees of heat than is necessary. Windows are opened, and that superfluous heat is lost -- the fuel has been wasted.

Now, no matter what fuel you burn, your heating plant can be made automatic. You can control it so that if you need only fifteen degrees of heat as against the outside temperature, in order to make the house comfortable, you get only fifteen degrees -- not twenty, or twenty-five.

I'd be glad to have an opportunity to talk this subject over with you. I feel sure I can show you how to save money on fuel bills, as well as how to have a more comfortable home, free from the colds that overheated and underheated rooms cause. Just telephone,

Very truly yours,
HARRY BROWN

A heating sales letter

Editorials

Spending in 1932

OUT of laboratory experiments have come, often by chance, products that have changed the complexion of an industry. Something of the kind has occurred here in the offices of DOMESTIC ENGINEERING.

In each issue we carry the two pages of advertising helps, called "Retail Advertising Service" pages. For each issue we give the best thought we can to creating merchandising ideas that will be effective.

In casting ahead for this work in 1932, we have hit upon an idea which, we believe, can be used by the industry to the best possible advantage. In studying sales appeals, we found ourselves faced with this problem: There are people who have money, but are not willing to spent it. Before they spend it, they will have to be given the best of reasons.

With this problem in mind, the advertising helps copy in this issue is built around this slogan: "Spend on the home in 1932." A reading of that copy will show how we have commenced to develop the idea. Further work will be put in on it, with the purpose of presenting to the industry a slogan, and supporting editorial and advertising material that will make it effective in putting a great many dollars into circulation in the interests of the home—surely the soundest way any man can spend his money.

Automatic Heat

IT MAY not be so romantic a thing to write about ideals today as when we turn to the pioneer period of American history. But we go on making them just the same. Automatic heat in the home represents just such a conception in the American mind. For many years the country was content with its parlor stove, and its kitchen stove. Then it took those heating appliances into the basement and piped the air, or water or steam, to the rooms above.

Within comparatively recent years we saw the application of the oil burner, the stoker and gas to the fueling of the heating plant in the basement. And with those appliances came the idea of automatic heat—heat that was controlled.

It seems obvious that the next development of this refinement of heating comfort in the home will be the conditioning of the air. The stoker was used industrially long before it was made in a size suitable for the home. Air conditioning apparatus is going through the same period of development and in time we shall have it as the necessary adjunct to the modern home.

Plumbing and heating contractors must prepare themselves for this later development. They have the knowledge and the mechanical experience to apply these things properly to the home. By being a little in advance of other groups, they may claim the larger part of these markets—the one for automatic heat, and the other for conditioned air.

A Happy New Year

OVER and beyond the merely courteous meaning back of that greeting, we feel there is a deeper significance. Those who have weathered through thus far are beginning to get a firmer grasp of their problems; as the times improve—and they must—that firm grasp and the better understanding that is growing out of our difficulties are going to make business a little more fascinating, and success a little more worth while achieving. These times of adversity are our preparation for a saner prosperity.

Gas—And Heating Developments

THE nation-wide interest at the present time in the distribution of natural gas is going to have a general effect on the heating industry, quite apart from what happens as to increased use of gas for house heating.

The spread of natural gas is going to focus attention on the problem of making home heating a more convenient and comfortable matter than it has been in the past. As an offshoot of the new interest in home heating we have already predictions freely made that, in a relatively few years, every home built will have air conditioning equipment.

Technically, air conditioning and heating are so interwoven that the heating contractor must begin now to familiarize himself with every phase of new development in heating, and with what can be done in the way of air conditioning. No one can predict how soon there will be a more or less definite settlement of air conditioning in the home in final form. But manufacturers are working on the problem; some products are being made.

There are two obvious directions in which the heating and air conditioning development may travel. First, the warm air heating industry may reap the greatest benefit. Second, the heating and piping contractor, combining the boiler with a product in the nature of a unit device, will warm and condition the air in the basement and force it through the house. It need not be pointed out that the heating and piping man will be wise to anticipate either of these developments, as one man at least has done, according to a story carried in the last issue of DOMESTIC ENGINEERING. The heating industry is in motion—keeping up with it is the present duty of the contractor.

PLUMBING and HEATING MERCHANDISING

The editorial section in DOMESTIC ENGINEERING that has brought to readers a comprehensive survey of every phase of retail selling—always as put into effect by plumbing and heating dealers

In this issue

Skilful Retailing

&

A Neighborhood Survey Produces Sales

&

He Took the Public Into His Confidence

Meeting Changing Merchandise Conditions With

Skilful Retailing

AN ACTIVE merchandising campaign to increase the sale of plumbing fixtures and accessories, washing machines, electric refrigerators, vacuum cleaners, hot water heaters and other natural gas equipment through newspaper and radio advertising and house-to-house canvassing was started some months ago by Herman Schrader, Salt Lake City, Utah, head of the Schrader Plumbing and Heating Company and the Home Appliance Company, which he operates cojointly at 2122 South Highland Drive.

The campaign followed the opening of one of Salt Lake City's most attractive and up to date establishments early this year by Mr. Schrader. The new place of business is located on the main street and in the center of the business district of Sugarhouse, a thriving suburb of Salt Lake City.

The program included a fifteen-week radio campaign, during which the concern went on the air for fifteen minutes each Tuesday and Thursday. The following is one of the first talks given to the radio audience:

Good Morning! This is the program of the Home Appliance Company located at 2120 Highland Drive, in Sugarhouse. This company is introducing the newest creation in electrical refrigeration. Discriminating women who enjoy beautiful things will immediately express their preference for this extraordinary machine which preserves the old Colonial simplicity and charm. You will like the graceful symmetry and pleasing proportions of the (——) cabinets, the full beveled top and corners, and the specially designed hardware that carries out the spirit of old colonial metal workers. Much more can be said of this unusual machine but not at the moment, right now there awaits you some captivating music.

(Music)
(Music)

The Home Appliance Company, sponsors of this program and dealers in Sugarhouse for the (——) Electric Refrigerator, say that the (——) needs neither care nor attention. You can count on the (——) to give you the kind of refrigeration you want. The mechanism is surprisingly quiet and current costs are reduced to a minimum. Ten years experience in building electric refrigerators guarantees you dependable, trouble free operation at all times and under all conditions.

(Music)
(Music)

And so we conclude this entertainment presented by the Home Appliance Company of 2120 South 11th East, Sugarhouse, reminding you that in addition to the many things we have mentioned, the (——) electric refrigerator also has ribbon-type shelves, the speed freeze feature, a three year guarantee, the famous porcelain cooling unit, and a host of other qual-

·ities that you will find for yourself when you see this marvel. Drive out today. The Home Appliance Company is located at 2120 Highland Drive in Sugarhouse, easily accessible if you live in this immediate section. Until next Thursday morning at 10:00 A. M. The Home Appliance Company bids you good morning.

A Broad Selling Plan

Other advertising includes newspaper and literature sent to the mailing list. The literature is principally supplied by the manufacturers of the lines carried, and is sent out both independently and with all statements, letters, etc. Mr. Schrader also plans on developing sales letters which will be printed on his letterheads. The mailing list consists of old customers and prospects secured through personal contact by salesmen and through queries as the result of newspaper and radio advertising.

Fourteen salesmen and three sales girls were employed in house-to-house canvass. They devoted full time and were paid on a strictly commission basis. Before being sent out, they were given a three-day training course during which they were taught the selling points of their products and were thoroughly familiarized with the various lines. Each salesman handles all of the lines carried by the concern.

A very effective feature is the illustrated album carried by each salesman. In the plumbing line, for example, it is comparable to the catalogue of the wholesale plumbing supply house, insofar as it relates to enamelware and other accessories in which the average householder might be interested. Included are various illustrations and descriptions of the different fixtures, together with prices for both white and color ware. In addition, different features are itemized as to price, as whether a customer wishes one type of toilet seat or another, or a built-in or leg tub. A glance at the album shows the salesman and customer the difference in the price of each.

The prices in the book do not include installation. While there would be no installation charge on some of the specialty lines, if the prospect is at all interested in plumbing fixtures or gas appliances, Mr. Schrader is called by the salesman, figures the price of installation, and the customer is thus given the data as to the charge of the job complete. Unless there is to be a labor charge, the salesman has all of the data necessary for preparing the contract for the customer to sign.

While the salesmen are paid on a commission basis, the salesmanager is paid a salary. It is his duty to train the salesmen and supervise the sales work generally, and also to aid the particular salesman to close the deal when the latter has a customer who is interested but cannot be induced to sign the contract, because of lack of finances, heavy competition, etc.

The merchandise is sold on a title-retaining contract and the note assigned to a finance company. The contract is made out in triplicate, the customer, the dealer and the finance company each retaining one copy. The original is of course sent to the finance company, while the other two copies are marked "duplicate" and "dealer's copy" and "purchaser's copy" and are non-assignable.

A Store for Sales

Mr. Schrader maintains a complete display of the various lines at the store. All articles are tagged with the price, so that any customer can tell the cost at a glance. The merchandise is also featured in the display windows, which are frequently redecorated.

With both the Schrader Plumbing and Heating Company and the Home Appliance Company operating at the same store and carrying a number of lines, Mr. Schrader believes that he has eliminated a number of the obstacles that have stood in the way of the development of successful merchandisers.

In the first place many masters have found that to simply merchandise plumbing fixtures and ac-

cessories through a sales force frequently offers a too restricted field. Plumbing fixtures perhaps do not lend themselves to merchandising as easily as such products as electric refrigerators, vacuum cleaners, washers and radios. By handling the several lines, the sales force has greatly increased opportunity for sales as, while the prospect may not be in the market for a set of fixtures or remodeling of the plumbing, he may be considering the purchase of an electric refrigerator, radio, or installing natural gas, etc., and the sale of any one means the desired profit.

Mr. Schrader believes that the several lines work well together and do not appreciably increase the operating expense, as the salesmen work on commission. In addition, where the company has made a contract in one line, it has an advantage when the customer wishes to purchase a product in another one of its lines. It also enables the salesman to build up a clientele which may make several purchases from him.

While Mr. Schrader is the head of both concerns, he believes that the separation of the two has certain advantages. The general public is apt to associate the title "Home Appliance Company" with the lines of electric refrigeration, washing machines, vacuum cleaners and radios more than it would with a plumbing and heating company.

The books of the two are easily kept separate and it can be accurately determined which lines are profitable and which are not. The commission of the salesman can be charged against the line sold, joint expenses prorated, and the salaries of employes engaged entirely in one line, as journeymen plumbers, charged to their branch. A separate personnel, including experienced men, can be built in either business, and profit sharing arrangements and financial connections made without affecting the other branch and each business must stand on its own feet.

Mr. Schrader has been engaged in the plumbing and heating business in Salt Lake City for a number of years and has handled large contracts throughout the intermountain country. At the present time, he is operating three trucks. He is a member of the Salt Lake City and Utah State Associations of Plumbing and Heating Contractors and of the Salt Lake City Chamber of Commerce.

How Salesmen Are Trained

The salesmen are largely secured through newspaper advertisements published by the Schrader Company. About the only requirements are that they have sufficient schooling to enable them to talk intelligently, prepare the form contracts for the sale of any article, have a good appearance and a reputation for honesty.

Before they are sent out, the sales manager uses parts of three days to go through the talking points of all lines handled. The salesmen are furnished with a long list of questions and answers relating to the construction, appearance, use, advantages, etc., of the lines and must be able to answer all of the usual questions asked by the customer. The primary purpose of the course is to make the salesmen thoroughly familiar with all of their products.

In addition, a fifteen or twenty minute sales meeting is held every morning. Whenever possible, experienced salesmen from other companies, such as factory or jobber representatives, are secured to address the salesmen. Other times the talks are merely inspirational and given by the sales manager. The daily meeting also gives the sales force the chance to bring up for discussion any problems or questions that they may have.

The new salesman is given one month's trial. If, at the end of that time, he has not made any sales and does not seem adapted for the work, his services are terminated.

The Company is now starting a system of keeping a record of all calls made. This includes the name of the party, number of calls made, the response, articles interested in, objections to buying, etc. Each salesman has his own exclusive territory.

If You Want Plenty of Sizzling

Hot Water

At any hour of the day or night get the (_____) GAS WATER HEATER made by (_____) Company.

Just light the burner and forget it—it's automatic. When you open the faucet an abundance of hot water comes tumbling out. Inexpensive to put in and cheap to run. Saves your time and temper. Come over to see it at our store and find out the EASY TERMS.

A Few Dollars Down
A Little Each Month

INSTALLED

20 Gal. $83.00
30 Gal. 98.00
40 Gal. 116.00

Schrader Plumbing & Heating Co.
or
Home Appliance Sales Co.
2122 So. 11th East Hy. 4545

Neighborhood Survey Produces Sales

Refrigeration is now a definite sales factor in renting apartments

THIS article is made up of data gathered during a survey, made at the instigation of a prominent wholesale house in Pennsylvania. The plan was to find the potential volume of plumbing and heating business indicated by inquiries.

The results were those obtained by three contractors only. Lists of property owners, totaling seventy-two, were obtained from these contractors. Permission was granted the writer and a wholesaler's representative to call on these prospects, all of whom had previously asked for information from one of the contractors. None of these leads were more than six months old, and some of them had been followed up by the contractors. They were lying dormant, but wide open to sales development.

One of these contractors was greatly surprised when one day a long-established customer asked for a price on a plumbing and heating remodeling job in a property he had just purchased. It was the first time in fifteen years of service that this customer had asked for an estimate. Fearing competition, the contractor figured the job very low and submitted his quotation. sometime later he called the writer and salesman into conference; he had just learned from his customer that his price was too high. A "direct to consumer" house had submitted a lower price. His first thought was to check his material list, re-figure his costs and try to meet the lower price. Then he sent for sales help.

When we arrived at his office, the first information sought was a copy or record of the type boiler, its capacity, the amount of radiation figured, style and quality of plumbing fixtures quoted by the competitor. The contractor had gathered none of this data, but using the specifications contained in his first estimate, the salesman suggested a complete revision of materials, using higher grade throughout the list. This, he explained, was one of the ways of taking the job out of competition with the "direct to consumer" house. From the price they quoted it was evident they had used a cast iron round boiler, figured radiation pretty close and used only an ordinary line of plumbing fixtures. The contractor was doubtful and when the salesman figured actual overhead plus a profit, he (the contractor) was quite sure he would not get the contract. The price was going to be too high.

Showing the Value Back of the Price

By previous arrangement, the owner was due and arrived at the office of the contractor about an hour later than the salesman's appointment. Between the customer, contractor and salesman, the conversation opened up very nicely and eventually the advantages of

the new specifications were intelligently analyzed. Then the customer referred to the "other price" and called attention to the fact that the contractor's new price was now one hundred and fifty-nine dollars higher instead of only fifty dollars, as in his first estimate.

The contractor and salesman then got down to real salesmanship. The customer had brought the "direct to consumer" company's bid with him. He laid it down before the contractor and salesman and they made value comparisons that were quickly convincing the customer that his cheap price was not getting him anything but a cheap job. The presence of the salesman made one move possible, that the contractor could not have put over without extreme finesse. It was, "What will you do if this direct to you" contractor does not instal a satisfactory job? To whom will you make your complaint? The salesman who sold you the job? He didn't instal it! He could not remedy it. The head of the company can't remedy it, he's not a plumber or heating engineer. The man who will actually make the installation and the only one you could appeal to will be a salaried employe who may not be with the company when you discover your trouble. On the other hand, you have known this contractor for fifteen years. Has he ever done one unsatisfactory job for you in all that time? No? Well, if he had, would you have any doubt about his willingness to make any error right. No! Then don't you trust him to the extent that he is giving you honest value for what he charges? Yes! Then why don't you close it with him, in whom, not only you, but we as a wholesale dealer, have complete confidence." "Well! I guess you'd better go ahead and do the work," was the reply.

Selling an Apartment Owner

A bit of merchandising that created the largest order for thirty-four iceless refrigerators was worked up when a real estate agent, in conversation with the salesman, recounted the trouble he was having getting tenants for a certain apartment house. The owner had complained about what he thought was lack of proper effort on the part of the agent. The salesman inquired about the style of plumbing fixtures, interior decorations, etc., and learned that the apartments were not equipped with iceless refrigeration. He suggested obtaining the owner's consent to the installation of one and if it resulted in landing a tenant, to equip the entire building with them. After a consultation with the owner, one apartment was fitted up with a popular make. Within four days the apartment was rented. The order for the remaining thirty-three apartments to be equipped, was given to the salesman. That was a fifty-five hundred dollar sale developed out of an actually cold lead.

An apartment owner found his renting difficulties solved by refrigeration. A sale of thirty was made

As a result of a number of such contacts, eighty-three hundred dollars in plumbing and heating work was developed out of dormant prospects. In every instance, after getting a price, the prospects had decided to "wait till times got better." Sometimes the contractor had to devise methods of financing in order that he could collect when the job was finished. Digging into the financial end made it possible to close more than one lead.

The survey covered a check on the records of three contractors and seventy-two names of prospects who were interested in making improvements in their properties. All of them had not been brought to the point of closing, but up to sixty days past, including the foregoing record of sales, over ten thousand dollars worth of remodeling or replacements in plumbing and heating had been developed within an area of ten blocks in this city where the depression had not made any exception to the rule.

From the records on hand, these seventy-two leads all cover modernizing old style plumbing and heating equipment, and are subdivided as follows: Thirty-two hot air plants where owners are interested in changing over to modern heating—twenty-five thousand six hundred dollars; Twenty-five prospects for replacing old style marble slab sinks with modern enamel or porcelain—seventeen hundred and ninety-five dollars; Fifteen prospects for various accessories—six hundred and fifty dollars.

We want to add, that the survey covers the records of only three contractors. There is at least double the volume of undeveloped prospects and business if every contractor in this city submitted his list of inquiries not over six months old.

He Took the Public into His Confidence

Henry Ellis; of the Crookston (Minn.) Plumbing & Heating Company tells how he made a survey of repair job costs and passed the information on to his customers to show how the "Shop on Wheels" saves money

I SENT out the circular letter (reproduced on the next page) to a list, covering our entire city; that is, to all who had a passable rating in the local credit exchange.

My reason in passing it along to you is that I have read with interest a good many enquiries and answers in DOMESTIC ENGINEERING relative to the "shop on wheels" system. I have noticed in a good many of the copies of the advertisements you have reproduced that they have stated there was no increase in charge for the added service. I don't think that is right. The shop on wheels is not going to add to the cost to the customer, but it adds to the cost of the shop equipment, and for that reason there should be an added charge. You don't see any other line of business adding equipment if they can't see where it is going to bring them returns.

How the Survey Was Made

I had never thought of checking up what our charges had been before using the shop on wheels, nor since, until I had two or three kicks on bills close together. Then, on the customers' enquiry, as to what we charged per hour, and on our telling them, they said, "No wonder it is high. You are charging more than the other fellow." (We never itemize labor on repair work.) That set me to thinking how to furnish the proof that our charges were not too high.

So I got one year's small repair slips on jobs that were done eight years ago, and checked through them. Then I took last year's small repair slips, I classified them, and averaged the labor charge. There was more than enough to get a good average and I found that the savings passed on to the customer had been a whole lot more than I would have thought possible. It ran from 4% to 30%; the average on the entire list was 17%.

And remember, this saving has been passed along to my customers while they have been paying the additional 25c per hour, as at least 95% of these calls were done inside the four-hour period.

If you think there is anything in the enclosed circular letter worth passing along to the trade, use it. I know from personal experience that there is a lot of satisfaction in handling repair work with the shop on wheels. It is worth more to the customer; it costs the shop more and, therefore, should be charged for. It will still be the cheapest, experience proves.

Averaging the Figures

In arriving at the figures to prove the savings to our customers, I took the different items as listed below. Of course, anybody in this

At right is the statement of Mr. Ellis issued to his customers on repair costs

game knows there would be more than the list I give, but so many of the calls cover the several different items at the same time, and if I didn't have sufficient of them in the list, I left them out. Then I tried to get the jobs to compare as to what was actually done.

What I mean by that is: Suppose a slip called for cleaning of a waste pipe, but when I was going through the list I found that on that job a tank ball was used and some bibb washers, it was proof that other work was done besides cleaning the waste. So I couldn't use that particular slip in my average on the cleaning of waste pipes.

Then I find that there is a lot of difference in the number of calls you get from one year to another on different kinds of repairs. The year I took the list from evidently was cold, as we had over a hundred calls to thaw and repair water pipe, and the last year we didn't have any.

My figures show that, before using the shop on wheels, the average was as follows: repair closet, $1.50; clean waste pipe, $1.39; repair faucet, $1.17; repair water pipe, $2.04; drain plumbing, $2.41; repair coil, $3.82; turn on water, $3.81; install tank, $6.02; connect stove, $3.53.

With the shop on wheels the charges were as follows: repair closet, $1.44; clean waste pipe, $1.15; repair faucet, $.94; repair water pipe, $1.42; drain plumbing, $1.75; repair coil, $3.62; turn on water, $3.03; install tank, $5.29; connect stove, $3.04.

Our saving would have been more on the repair of coil and connecting of stoves if it had not been that I made a minimum charge for those two items, since I have used the trucks, as there are many times when we will repair a coil or connect a stove, inside an hour and a half; but our smallest charge for those two items has been $2.50.

Then, don't forget when you are comparing the above figures, that from 95% to 98% of the list done with the shop on wheels carried an additional 25c per hour charge.

106 2nd. St.

Office Phone 975
Night Phone 758

CROOKSTON PLUMBING & HEATING COMPANY

HENRY ELLIS

CROOKSTON, MINNESOTA

Did these thoughts ever enter your mind:

Who pays for the Shop On Wheels? Is it an added expense on our repair calls?

When we started the Shop On Wheels System, we were satisfied that there was at least a waste of 25¢ per hour on the plumber's time on small repairs, and our idea was to save that 25¢ and get it ourselves, (a selfish thought you will say), but only business, since a waste of time or money does not do anyone any good, so the result of our thinking was the use of the Shop On Wheels, and after five years use it has proved out better than we expected.

The average saving on our labor charge on nearly 3,000 repairs, which we have checked and classified, passed on to our customers has been 17%.

These items hold considerable interest for us, as well as for our customers. We could not find one class of repair work on which our labor charge did not average less with the Shop On Wheels than it did when we walked, and could not carry the necessary tools and parts, and had to make trips back to the shop for needed supplies.

On 493 repair slips, calling for repair of closet, we found that our average saving was only 4%; then on 253 calls for repair on faucet our charge averaged 19% less, and for cleaning waste pipes on 497 calls we saved our customers 17% by using the Shop On Wheels.

And so on all along the line, you can depend on our being able to save you money by letting us take care of your repair work, alterations or new installations.

Since we have been using the Shop On Wheels System, we have been charging $1.50 per hour for the first four hours, and then $1.25 per hour if the job took longer than the four hours.

Now, during the spring and early summer months, we are going to give you the advantage of still further savings by reducing our charge as follows: $1.50 for the first hour, and $1.25 per hour after that, instead of after four hours as previously charged, which makes a reduction of over 10% on a job taking four hours or over.

We carry the best known lines of plumbing and heating supplies, and for the last word in heating comfort the (_____) Oil Burner, and for automatic heat with economy the industrious (_____) Stoker.

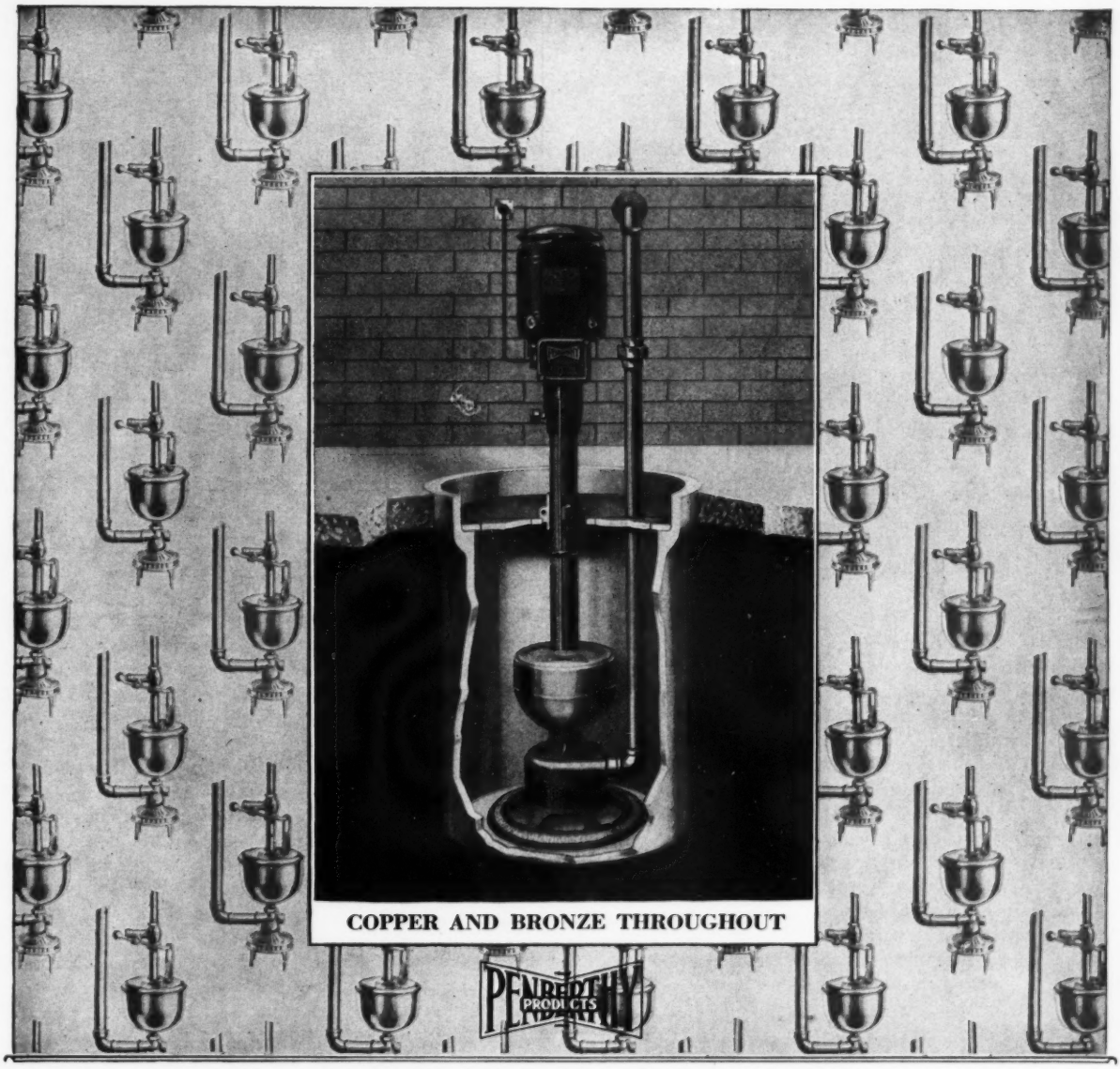
Drop into our store anytime and talk over your plumbing and heating problems, and see the different items we furnish for your comfort.

The next time you need the service of a plumber, be sure to remember our phone, No. 9 7 5, and we will be right on the job.

We have only certified D. D. H. - D. S. mechanics working in this shop.

Yours for better and more economical service,

23 Years Young. CROOKSTON PLUMBING & HEATING COMPANY.



BEHIND THE PENBERTHY AUTOMATIC ELECTRIC SUMP PUMP

is an intimate understanding of drainage problems — a first hand appreciation of sump pump requirements—an excellence of engineering skill and workmanship—a practical knowledge of the possibilities and limitations of materials. Behind the Penberthy Automatic Electric Sump Pump lies experience in the development and manufacture of the Penberthy Automatic Hydraulic Cellar Drainer and other liquid-moving devices since 1886. Write for complete information.

PENBERTHY INJECTOR COMPANY

ESTABLISHED IN 1886 — DETROIT — CANADIAN PLANT WINDSOR, ONT.

The Venting of Batteries

By HARRY DAVIDSON

THE discussion in this article is based on Fig. 1. In this plumbing installation all the sewage of the entire system flows past the group of water closets marked A. All other groups of fixtures are on branches through which flows the sewage from no other group. From the point where the main vertical soil line meets the horizontal is to be considered the main horizontal soil line.

The question is, how should this group A of water closets be vented?

Is it good practice, or the best practice, to use a circuit or loop vent on a group of water closets located on a main horizontal line? It is so vented in Fig. 1, and we feel sure that in many and probably most cities this would pass as excellent practice. In other sections, however, other methods of venting would be demanded, and we are among those who would favor some other method.

We do not believe the venting of group A as shown in Fig. 1, can be depended upon under all conditions that may arise. We do not believe this method of venting will always be sufficiently positive.

In circuit and loop venting, the horizontal soil or waste line serving the fixtures so vented, must act not only in the capacity of waste or soil, but must also act as a vent pipe. In order to supply air to the several fixtures, air must reach their traps through the soil or waste line. The air is carried in the upper part of the horizontal line of pipe, and if anything happens to obstruct and interrupt the passage of this air, venting is thereby brought to an end.

It is a question whether at times this part of the horizontal line into which group A discharges will not be so filled with sewage as to interfere with and probably entirely obstruct it as a vent. It should be noted that this danger will be considerably greater when the drainage

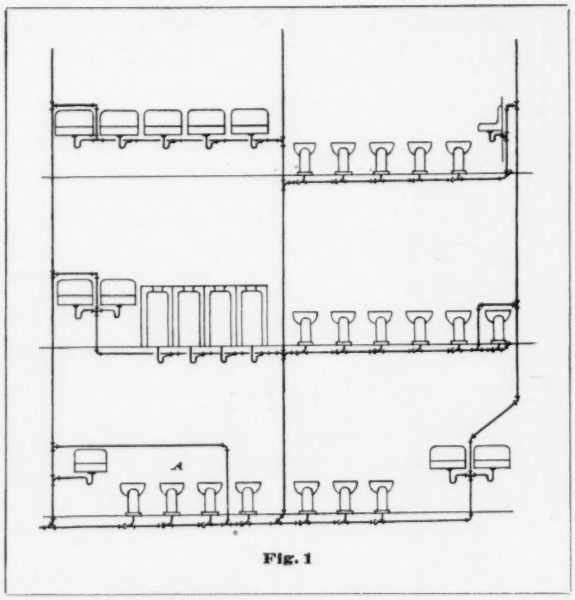


Fig. 1

fittings into which the water closets discharge have their branches pointing up than when the fitting is laid flat as in Fig. 1. When the branch points upward, waste passing from the closet bowl will form a sort of curtain across the entrance of the branch, and for the time being this will obstruct the vent. This difficulty is overcome by laying the fitting flat.

There are two ways in which the possibility of this vent interference may be overcome.

Fig. 2 shows one of these methods, which consists of using the common individual vent from the closet bend. This is the simpler, less expensive method, and doubtless most commonly used when it is desired to overcome the difficulty mentioned.

Some plumbing codes make it obligatory to use circuit or loop venting in connection with all batteries of water closets. Under such conditions the only alternative is to put such a battery as group A on a horizontal branch of its own. This idea is shown in Fig. 3. When this is done, such a group of fixtures is then under no different influences than the fixtures of any of the other groups shown in Fig. 1.

However, such a solution as Fig. 3 shows is accompanied by some considerable additional expense. The method of individual vents, as in Fig. 2, we believe to be entirely effective, and that of course is the chief consideration. At any rate, either Fig. 2 or Fig. 3 presents a venting method that is preferable, under the circumstances, to the one in Fig. 1.

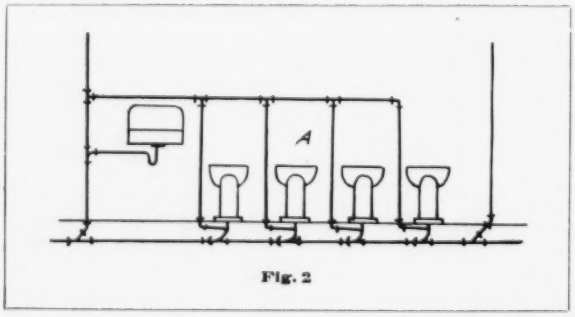


Fig. 2

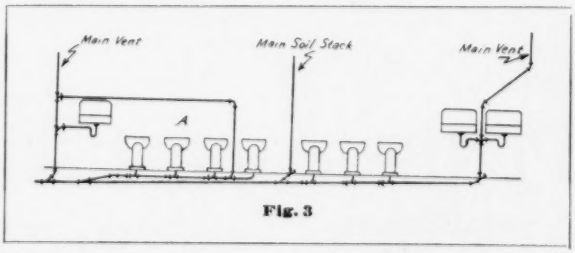


Fig. 3

DOMESTIC ENGINEERING

AN EDITORIAL SECTION

AUTOMATIC HEAT SECTION

The Contents:-

A reader asks a question and Earl Brown undertakes to answer it in

Orifices for Automatic Heat

This heating dealer, long and successfully established, sums up his philosophy of stoker salesmanship:

"We Sell Uniform Temperature"

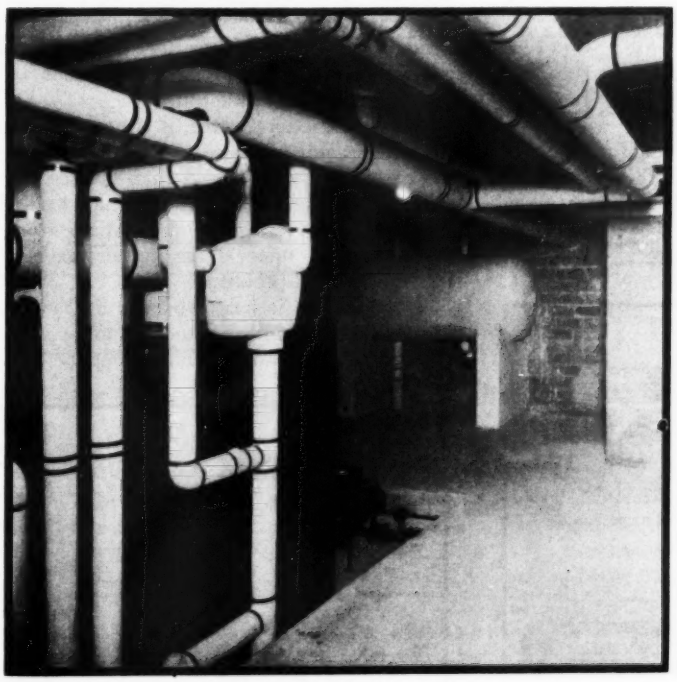
What it takes in the way of engineering knowledge, careful installations, selected prospects and personal effort to

Create Market for Oil Burner Sales

Women, statisticians tell us, are the dominant buying influence in the country. Readers will find interesting

A Women's Viewpoint on Automatic Gas Heating

Orifices *for* Automatic Heat



The view at the left shows some of the piping involved in a heating system which is fired by an oil burner. The different sized mains indicate to some extent the efforts made at balancing

There are various ways to control heating systems with temperature regulating devices. This article considers the method employing a single and centrally located device and it points out the need for carefully balancing a system so operated when it is fired with automatic equipment

By EARL BROWN

Lostant, Iowa,
November 14, 1931.

Gentlemen:

A few years ago when I was doing a considerable amount of residential work, you didn't call for orifices in every radiator. The old jobs worked very well and I don't understand why you call for orifices on the Anderson job. Please let me know why you have changed your specifications.

Very truly yours,
John Gaston.

I had this letter in my pocket when I went to Lostant a short time ago, so I answered it by a personal call.

"Did you receive my letter?" Mr. Gaston asked, after the usual exchange of greetings.

"Yes, I have it in my pocket. I knew that I'd be here soon, so I decided to drop in and talk the matter over with you.

"You are perfectly right when you say that we did not use orifices a few years ago, but that was before the time of automatic heat, wasn't it?"

"Yes, it was. They were all coal burning jobs and most of them did not even have thermostats to control the drafts, but what has that to do with orifices?"

"In operating these older type jobs, the owner fires up in the morning and then banks his fire for the day in all except mild weather, doesn't he?"

"Yes, that is the way they are managed."

"The banked fire holds a little heat in the radiators all day long and they never cool down entirely until the next morning. Then if all the radiators do not heat exactly evenly, it doesn't make a great deal of difference because the slow ones have plenty of time to catch up.

"Mr. Anderson will have an automatic heat job with an oil burner installed in his new home. How will this particular burner be operated?"

"Why, it is of the type that will be started and stopped by the thermostat."

"Then, you see, of course, it will be either 100 per cent on or 100 per cent off, and while it is off no heat will be applied to the boiler except by the heat retained in the brick setting. The chances are that the burner will usually be off long enough to let the radiators cool down. Then if one or two radiators are a little slow to heat up they will be behind the rest nearly all day long because by the time they do heat up, the burner will probably be shut off. Isn't that right?"

"Yes, it sounds very reasonable."

"In other words, with a coal fire, we had a fairly steady heat nearly all of the time and keeping the radiators in step was not so important, while with an oil burner the system is heating or cooling most of the time and we must be careful to have the radiators as nearly in step as possible. That is why we use orifices."

"Oh, is that the reason?" our friend exclaimed. "Now tell me, just how do orifices help matters? I'm really interested in knowing the whys and wherefores of these orifice systems."

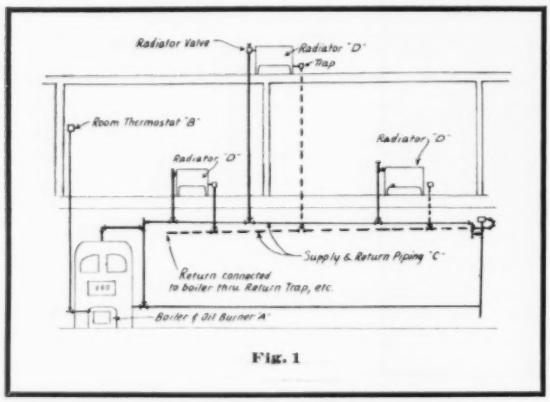


Fig. 1

"You realize as any one does who has worked with heating systems that it is impossible to install one which will be perfect, but we are always trying to do that very thing. So I believe I'll tell you the things I think are most important in making a system operate with as great a degree of perfection as possible.

First I'll sketch a simple automatic heat vapor system. This one I'm making now will be Fig. 1. Such a system consists of: (A) a boiler and an oil burner, controlled by (B) a room thermostat, (C) a piping system to distribute the steam to the radiators and return the water of condensation to the boiler, and (D) the radiators.

"When the system is in operation the room thermostat (B) keeps the burner running until the air surrounding the thermostat is at the required temperature, say 72 deg. Fah., at which time the thermostat stops the oil burner. Then, when the temperature around the thermostat drops to a lower point, say 70 deg. Fahr. the burner is started and runs until the air around the thermostat is again at 72 deg. Fahr. By keeping the temperature of the air around the thermostat between 70 deg. Fahr. and 72 deg. Fahr. it is hoped that the temperature throughout the building will stay within the same range. Obviously, if the radiator in the room in which the thermostat is located requires five minutes to heat all the way through and the radiator in the next room requires ten minutes to heat, the second room will be slow in coming up to temperature. If the burner runs only a few minutes, it is very likely that the radiator in the second room will start to cool because the burner has been stopped by the thermostat before this room is up to temperature. In such a case it is very probable that this room will remain too cool even though the room in which the thermostat is located may be maintained at the proper temperature. In the same way, if the radiator in a third room requires only two minutes to heat all the way through, this room will probably tend to be too hot all the time.

"To make matters worse, it is usually the case that if the first radiator heats up faster than the second, it will also cool down more slowly than the second one, which is another reason the rooms may not be maintained at the same temperature. If the radiators are all of the same kind, the unequal heating of the radiators is a steam circulation problem.

"If an automatic heat job is to operate satisfactorily all radiators should start to heat at approximately the same time, they should require about the same length of time to heat through, they should start to cool at approximately the same time and should require very nearly the same time to cool. For a perfect job, all radiators will have to be in step but even for an average job they cannot be very far out of step or trouble will result."

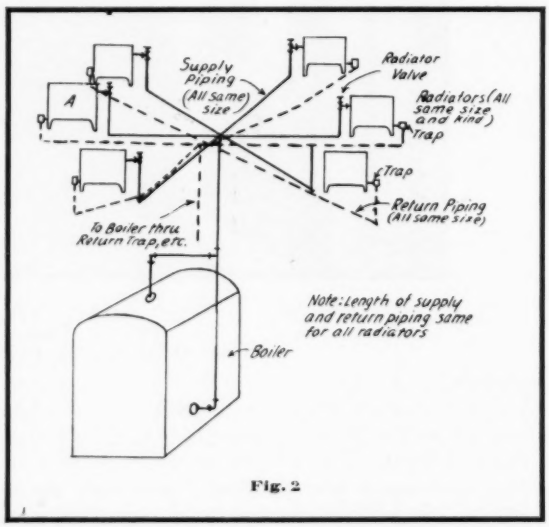


Fig. 2

"Just how do you handle that problem? How can all of the radiators on a job be made to keep in step?"

"Sometimes that is a very difficult problem. If all of the radiators on the job are the same size and kind, if they all have the same size supply and return piping, valves and traps and if the length of piping is the same for all radiators, the system will be perfectly balanced. Such a system is sketched in Fig. 2. If the thermostat is located in the same room as radiator (A) and it keeps the temperature of this room between 70 deg Fahr and 72 deg Fahr, the same temperatures will prevail in all of the other rooms if everything else is the same. From the standpoint of steam circulation and distribution, such a system would be ideal, but the arrangement shown in Fig. 2 is not at all practical for many reasons. How

many jobs have you installed where all of the radiators were the same size, and have you ever seen a job where the length of piping to one radiator is the same as it is to every other one?

"The job shown in Fig. 1 is a much more common arrangement, with different size radiators, piping of different sizes and with some radiators close to the boiler and some far away. And since this is the usual system

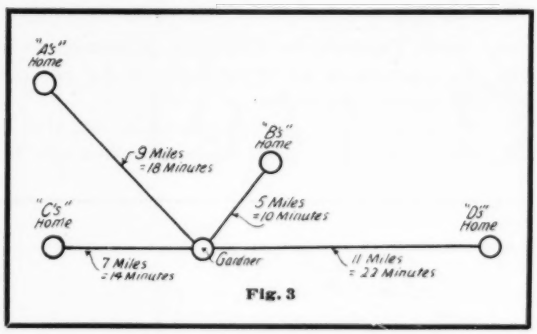


Fig. 3

we are called upon to install, it is up to us to find a way to balance it.

"When I speak of balancing a piping system I am reminded of one time when the road commission suddenly decided to oil all the roads in our community. I always suspected that their inspiration came from the tongue of a very good road-oil salesman, rather than

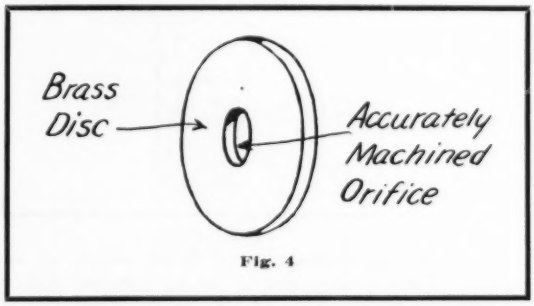


Fig. 4

from a zeal for the community's welfare for there was oil everywhere. Several of my friends had been driving to work at a factory in Gardner, and before the coming of the oil salesman, with the roads in the condition they were, these fellows made an average speed of about thirty miles an hour. At this rate it used to require 14 minutes for Bert to get to work; Charles would take 18 minutes; Dick counted on 10 minutes; and it took Eddie 22 minutes. They had a certain amount of fun comparing notes seeing that every fellow kept up his driving schedule and offering much sympathy to Eddie because he had so far to drive.

"Since it took each fellow a different length of time to get to work, you might call this an unbalanced road system, as we wish to compare it with an unbalanced piping system. Sections of the roads which Bert, Charles and Dick had to use were oiled so that they had to detour. Bert had to add 8 minutes to the 14 on which he usually counted; thus requiring 22 minutes, the same time it took for Ed who did not have to detour. Both Charles and Dick encountered detours, also, so that they too had to spend 22 minutes going to work. Ed had the laugh on them now, but he was a quiet fellow who never got very far when he tried to kid the other fellows. So the fact that all four fellows spent the same time, 22 minutes, in going to work, was not the subject of conversation that it might have been.

"The road system was now balanced, as the detours had served to make the driving time the same for each.

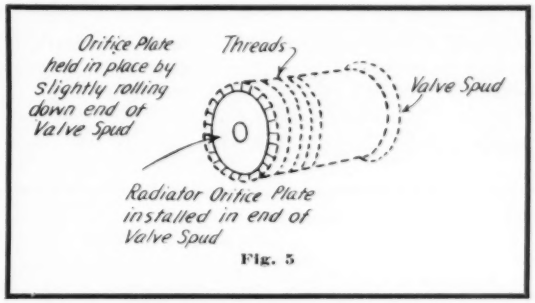

Orifice Plate held in place by Slightly rolling down end of Valve Spud
Threads
Valve Spud
Radiator Orifice Plate installed in end of Valve Spud

Fig. 5

"Just before the oil was dry enough to be used, there was a small cloudburst near Gardner and a bridge was washed out on the road to Eddie's town, requiring a 20 minute detour. The flood increased the time required by the other three detours, so that it took 20 minutes longer, thus extending the driving time of each fellow to 42 minutes.

"The road system maybe balanced then, by (a) detours in the three shortest roads, and by (b) detours in all four roads.

"The usual unbalanced piping system is similar to the road system shown in Fig. 3 because in such a piping system the time required for the steam to reach the radiators is different for each radiator. One method

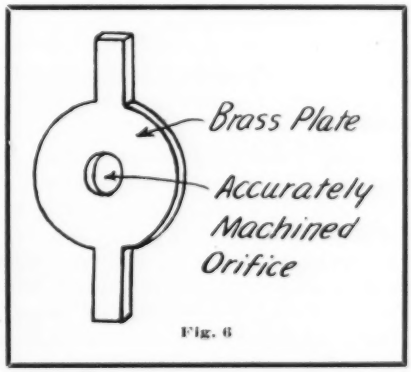


Fig. 6

of balancing such a system is to install an orifice in the supply connection to each radiator except the one that would otherwise receive the steam last. However, this is not the usual method, because of the high degree of accuracy required in selecting the orifices.

"This can be explained best by again referring to the road illustration. The total driving time required from each fellow's home is 22 minutes. Suppose the road which 'A' uses always becomes slippery in wet weather and the driving time on the regular road is increased from 18 minutes to 22 minutes, then if the detour is added, the driving time is increased from 22 to 26 min-

utes, an increase of 18 per cent. Thus a small change of four minutes due to slippery roads makes a large difference in percentage.

"Now let us see what the same change would do in case the driving time for each fellow is 42 minutes. When 'A's' driving time on the regular road is increased by four minutes, the total time required to get to Gardner is increased from 42 to 46 minutes, an increase of only 9.5 per cent. This per cent of increase is just about half as much as it was in the other case. Thus, the longer the time required by the detours, the smaller the percentage of increase if the regular driving time is increased.

"In the same way, if orifices are installed on the supply connections to all radiators except the radiator

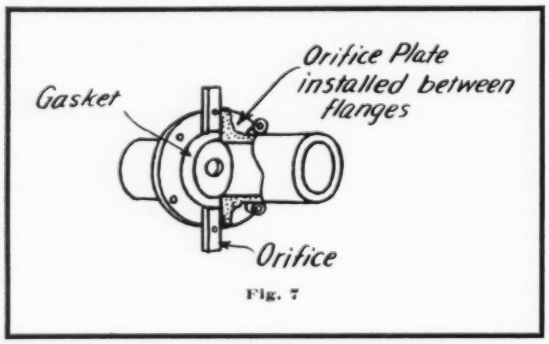


Fig. 7

which heats the slowest, the orifices will be quite large. Any individual orifice will simply slow down the steam enough to make up the difference in circulating time between the radiator it serves and the slowest radiator. If only a slight error is made in determining the circulating time of the slowest radiator, all of the other radiators will circulate considerably faster or slower because the percentage of error will be high. Or, if the normal circulating time without the orifice is not determined correctly for a given radiator, this radiator will be considerably out-of-step because again the percentage of error will be quite high.

"On the other hand, if an orifice is installed in the supply connections to every radiator, each orifice may be made small enough to slow down the steam considerably. In this case, if a slight error is made in determining the normal circulating time of the slowest radiator before its orifice is installed, the other radiators will not be thrown far out-of-step because the percentage of error will be small. Likewise, if an error is made in determining the normal circulating time of any one radiator, it will not be far out-of-step because again the percentage of error will be low. In both cases the percentage of error is low because the error in determining the normal circulating time is usually very small in comparison to the amount the steam is slowed down in the orifice.

"As a matter of fact, in many cases the orifices are sized in such a manner that they slow down the steam to a point where the normal circulating time of the radiators may be disregarded. This can be explained by referring again to the road illustration. If the time required for each detour should happen to be increased by 200 minutes, the total driving time to the town will be 242 minutes. Then for 'C' the detour alone would require 228 minutes. If the time spent on the regular road is disregarded the increase is only 14 or 6.15 per cent. For

$\frac{14}{228}$

the road 'A' would take, the increase is 18 or 8 per cent;

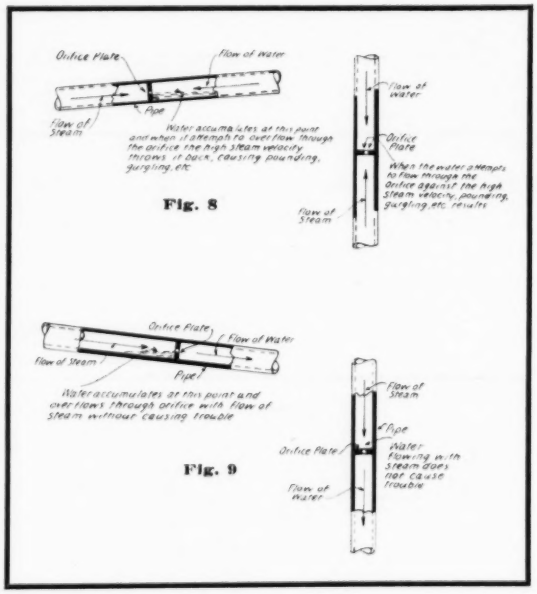
$\frac{18}{224}$

for 'B' it is 10 or 4.3 per cent; and for 'D' it is 22 or

$\frac{10}{232}$ $\frac{22}{220}$

10 per cent. The greatest difference in increase is between the roads taken by 'B' and 'D', or 5.7 per cent, which can usually be disregarded.

"From the above explanation it is easily seen that the most practical way to balance the system shown in Fig.


Orifice Plate
Flow of Water
Pipe
Flow of Steam
Water accumulates at this point and when it attempts to overflow through the orifice the high steam velocity throws it back, causing pounding, gurgling, etc.
Flow of Water
Orifice Plate
When the water attempts to flow through the orifice against the high steam velocity, pounding, gurgling, etc. results
Flow of Steam
Fig. 8
Orifice Plate
Flow of Water
Flow of Steam
Pipe
Water accumulates at this point and overflows through orifice with flow of steam without causing trouble
Flow of Steam
Pipe
Orifice Plate
Water flowing with steam does not cause trouble
Flow of Water
Fig. 9

1 is to install an orifice in the steam supply to each radiator. Each orifice should be so selected that the time required for the steam to flow from the boiler into the nearest radiator is the same as the time required for the farthest radiator and for every other radiator. Thus the radiators will all be in step.

"An orifice is a hole in a metal disc which is inserted in the supply pipe or valve in such a way that the steam must flow through the orifice. When the steam flows through the orifice, it is slowed down just as an automobile is slowed down by a detour or by a bottle neck. For a given amount of steam, the smaller the orifice, the more the steam will be slowed down.

"A typical radiator orifice plate is shown in Fig. 4. This one, the usual type, consists of a fairly thick brass disc with an accurately machined orifice in it. The orifice is usually much smaller than the disc. Radiator orifice plates are usually installed in the ends of the valve spuds as shown in Fig. 5. They are sometimes installed in a similar manner in nipples and in the male ends of union ell.

"A typical piping orifice plate is shown in Fig. 6. They are usually made of a thick brass plate cut in the

(Continued on Page 78)

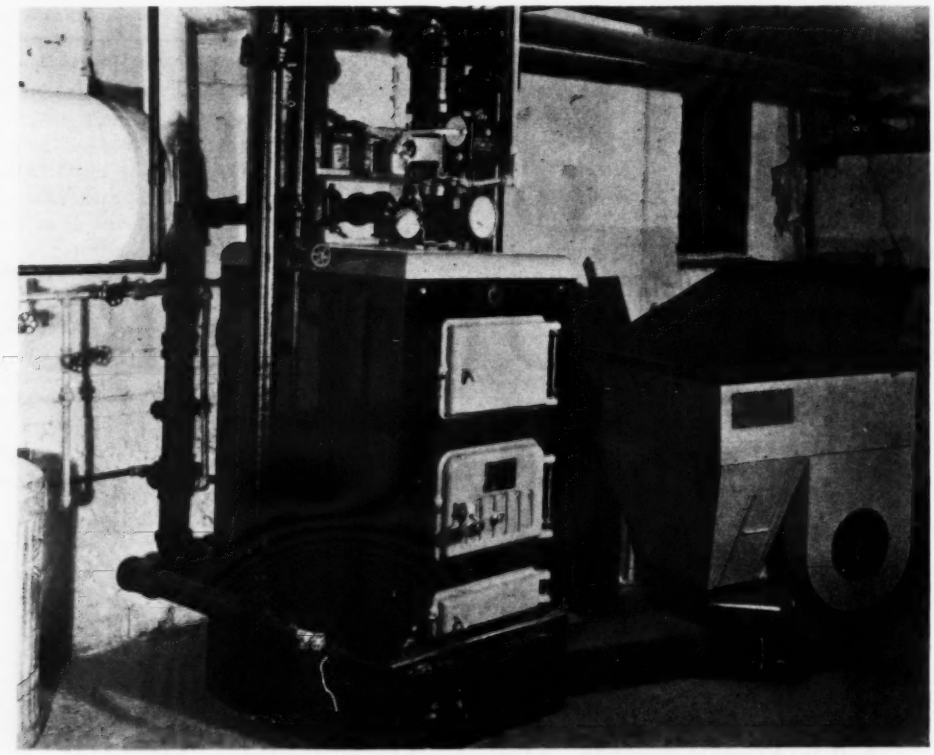
To Our

1931 DEALERS

A Note of Appreciation

At this time we wish to thank each and every Richardson and Boynton Co. dealer for his cooperation during the year just past. This has been an encouraging year—decidedly. And we look forward to 1932 with real enthusiasm! To you, our friends and representatives, we extend our sincerest wishes for better business and better times—and we pledge our own best efforts to that end.

RICHARDSON AND BOYNTON CO.



"We Sell Uniform Temperature"

says Edwin Saeger of Allentown, Pa., in describing the methods his firm is using to develop profitable stoker sales

We are glad to present this story, concerning the activities of a progressive heating firm with a splendid reputation for merchandising not only staple products of the industry, but specialties. It is conclusive proof, we feel, that the men of this industry are the men to push automatic heating equipment » » » » »

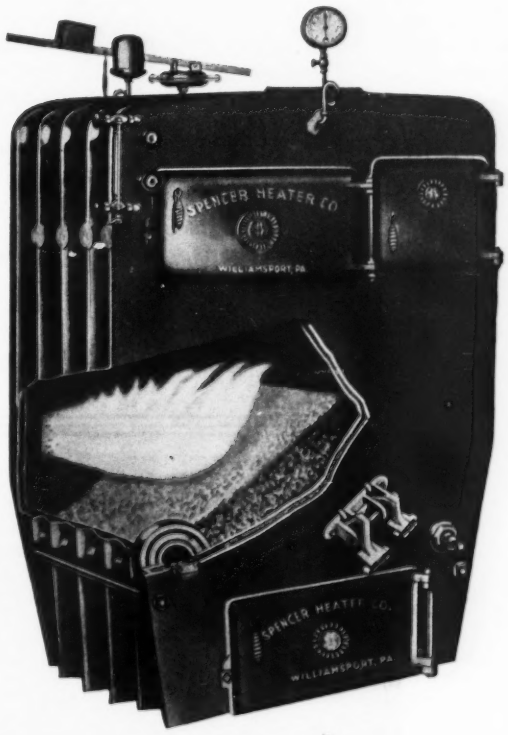
"BE SURE you're right, then go ahead," is a mighty good motto. That's how E. P. Saeger & Co. feel about taking on a new line. Before they went into the automatic stoker business they did quite a bit of experimental stoking with a variety of stokers. And after they had stoked to their own satisfaction they were ready to sell automatic stokers to their customers.

This firm is one of the largest and longest established heating contractors in Allentown, Pa., having been in operation close to forty years. It has installed some of the largest heating systems in eastern Pennsylvania. One of their first installations of stoking equipment was

AUTOMATIC HEAT SECTION

1932's Greatest Sales Opportunity

New Spencer GAS-COAL Combination Boiler



YOU can increase sales and profits with the new Spencer Combination Boiler. In one unit, it meets the demands of everybody:—

Those who want to burn gas, all or part of the time

Those who want to burn coal most of the time, and gas for short periods in mild weather

Those who want to burn coal at present, but wish also to be sure that they can burn gas at some later time

(All Spencer Magazine Feed Boilers are now so designed that the gas burner equipment can be installed later if desired).

Gas for heating is being extended to more and more communities. Thousands of families would like to burn gas for its convenience, but find its constant use costly. This new Combination Boiler combines the most economical coal boiler—Spencer Magazine Feed—with built-in gas equipment. Permits burning gas instantly at any time, by throwing an electric switch in the living room. Nothing to attach, adjust or connect. Both fuels under complete thermostatic control. Write for descriptive literature.

SPENCER HEATER CO., Williamsport, Pa.

The Spencer Foundry Company, Ltd., Toronto, Ontario, Canada

SPENCER
Magazine Feed
BOILERS
for steam, vapor or hot water

in the Union Station at Bethlehem, Pa., a double-boiler outfit that was operated during the first year with a saving of almost a hundred tons of coal.

Edwin Saeger, sales manager, stated that this is their second year in the automatic stoker field and that the sales possibilities have not even been scratched as yet. He looks forward to sales of thousands of stoker installations within the next few years.

A Year of Experiment

"Our first year with this line was more in the nature of missionary work," he admitted. "Our first year's business amounted to thirteen installations, but every one of these has been highly satisfactory. With these recommendations to back us up we find that the sales resistance is diminishing and we no longer have to overcome the prospect's prejudice against experimenting with something new.

"As an illustration of the prestige which the automatic stoker has gained in a single year he told how easily he made a sale to General Harry C. Trexler, multi-millionaire cement and railroad operator whose estate adjoins the city.

"Last year I tried to sell General Trexler stoking equipment for his greenhouses, but after a lengthy interview he refused to make any change. This year I went to him with a list of our installations and definite figures regarding their efficiency, and within fifteen minutes I had his contract for the job. This installation is an outstanding example of heating efficiency. It has made possible the use of a cheaper grade of fuel, less tonnage, and a night attendant is no longer required. Installations like these present such outstanding sales arguments that they demand the prospect's earnest consideration."

Mr. Saeger is convinced that automatic stokers offer greater sales possibilities than any other single item within recent years. In selling residential equipment he presents his facts and figures step by step.

"From now on we must sell temperature," he asserted. "We can no longer go to the home owner and lay down pictures of boilers and radiation and allow the customer to select the equipment which may strike his fancy, irrespective of whether it will deliver the required uniform temperature at a minimum of cost and trouble. How many homes are there today in which temperature conditions are satisfactory throughout the winter? Future success in the heating business depends on delivering the goods—which is nothing more than delivering uniform temperature to every customer.

Selling Heating Comfort

"Every home owner who has trouble in maintaining a uniform comfortable temperature is a live prospect for stoking equipment. Our first argument breaks down sales resistance at the beginning. We offer to sell, first of all, thermostatically controlled uniform temperature all the time. We guarantee that without any ifs and buts. We prove it with every installation we have made.

"Next, we prove that this temperature will be delivered at a lower annual cost, a saving in both tonnage and grade of fuel. These savings mount into impressive figures where we are able to substitute rice and buckwheat for chestnut and stove coal. In many cases we have been able to prove that the stoking equipment will

pay for itself in four and five years from the savings in fuel alone.

"Third, we dwell upon the convenience of automatic equipment, the freedom from care, the perfect combustion of every ounce of fuel, and the elimination of dirt and dust from ashes when they are automatically placed in dustproof cans."

Mr. Saeger is surprised that so few heating contractors have seen the sales possibilities in stokers, because the stoker salesman has every advantage on his side. He can sell temperature with absolute confidence, and he can present figures on economy over hand-firing that are impressive.

"If a man objects to placing the coal in the hopper, we can readily meet his argument by offering to install an automatic conveyor from the coal bin to the stoker. We have made one such installation, which is working perfectly.

"How do you develop your prospect list and how do you secure an interview with the prospect?" he was asked.

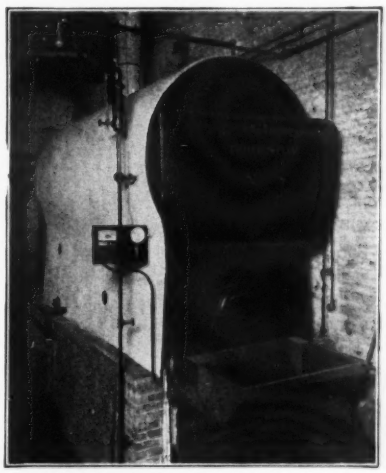
"Building a list of prospective customers for stoking equipment is simple enough. Our greatest problem is to get around to interview all of them, to have them decide just when they are ready for the installation. We installed twenty-eight stokers this fall, some of them large jobs, and we have on hand a list of more than seventy-five for installation during the next season. Many of these would have been installed this fall, but the dates were changed to next spring and summer on account of local business conditions.

He Gets Co-operation

"Every contractor who handles stoking equipment will find the local coal dealers willing to give all kinds of co-operation. With stoking equipment installed in a home the coal dealers are assured of a steady demand for coal. It is to their interest to promote the sale of stoking equipment, and they have given us many good leads. A large number of prospects appear at such places as the better homes expositions, the county fairs, and our own show rooms, where we maintain a complete line of plumbing and heating equipment. Our advertising in the newspapers also brings a number of live inquiries. Direct-mail is used to circularize prospect list.

"Interviews are usually arranged for, either by telephone or letter. We prefer this method because we like to have a man think about his heating problems before we call. If he can get all his objections lined up in advance, so much the better, because we can then dispose of them in rapid succession. The best plan is to see the prospect when he has sufficient time to hear the whole story. Short interviews at frequent intervals are not as satisfactory. Get the prospect pinned down to the point where he admits that he should have a stoker. If he don't buy then get his reason and make definite arrangements regarding the time he will be able to buy. Keep these prospects cards on file and follow them up until the sale is made.

"Another source of prospective customers we never overlook is our list of satisfied customers. We don't forget a customer after a sale is made. Instead, we try to keep on friendly terms with them, year after year, and the amount of business they are continually turning our way is a source of much satisfaction to us."



RESULTS

Are What Count!

Real boiler values are best determined by actual results during a long period of service. A few days, weeks or months are no index . . . but true value must be considered in the light of years of service.

Actual results are responsible for the widespread idea that JOHNSTON BOILERS possess many essential features which mean **extra boiler value.**

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Study the specifications of a JOHNSTON. Compare its dimensions, and study results. You'll be convinced about the extra value possessed by these quality boilers.

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JOHNSTON BROS., Inc.
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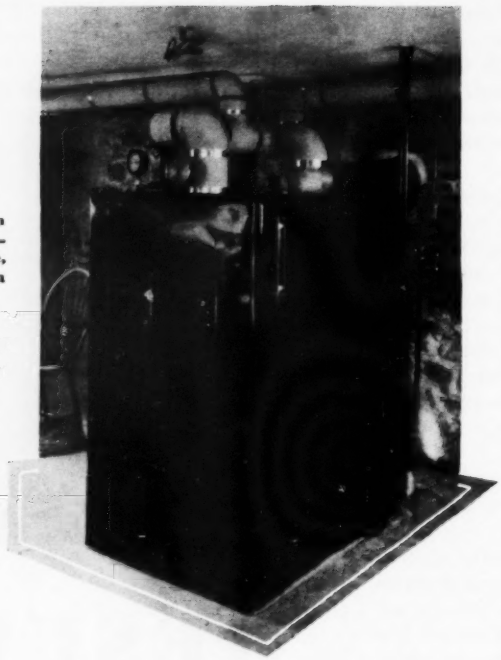
AUTOMATIC HEAT SECTION



This installation is in the contractor's own home, and serves as a demonstrator

Selected prospects
Demonstrations »
Direct-Mail » » »
Canvassing » » »
Good engineering
Organized service

Create Market for Oil Burner Sales

By J. K. STONER

LET us examine a small plumbing and heating business, in a town of ten thousand population, which handles a particular type of oil burner and discuss its methods of merchandising automatic heat, and of organizing properly the necessary servicing activities.

In the particular concern about which we are writing, the proprietor has a jacketed boiler erected in his showroom. This boiler is connected to one radiator for demonstration purposes and is equipped with a rotary type oil burner which fits entirely inside of the boiler. It is equipped with safety controls and ignition cut-out as well as the switch and fuse box. The thermostat is located on the wall opposite the boiler. The oil tank is erected outside of the shop and feeds by gravity to the burner. In order to make it useful for demonstrations, the main switch is always on and the burner is operated by the thermostat.

It takes but a minute to show a person, who has stepped into the store, how the burner is installed in the boiler and how it can be operated by pushing the control on the thermostat above the actual temperature of the room.

Numerous prospects were discovered and sold in the showroom entirely upon the merits of the showroom demonstrator.

Getting Started

When the contractor about whom we are talking first started to handle the oil burner, it was necessary to stage some type of campaign which would interest

people in oil heat. The distributor of the burner sent an experienced man to the contractor and they took the city directory and from it compiled a list of over one hundred business men who owned their own homes. These men were chosen as oil burner prospects because, (1) they were men of business, (2) their income was sufficiently steady to assure financial capability, and (3) they owned their own homes which were suitable for the installation of an oil burner.

After the list had been compiled, the contractor sent each person an illustrated folder telling the advantages of automatic oil heat. Another folder was then sent out showing the operating parts and describing the feature points of the burner he was selling. The literature had been out about two days when the contractor and the salesman, sent by the distributors, started out to canvass these people.

The first two sales were made to business men who had both moved into two pre-occupied homes where there were obsolete oil burners in use. These men were familiar with oil heat and had only to be interested in a particular type of burner. The third sale, as the contractor discovered later, was made entirely through the contractor's business reputation. This man told us that he bought the burner from this contractor because he knew him to be a reliable business man who would not handle or attempt to sell unreliable goods.

The rest of the folks on the list were interviewed at some time or other after the first canvass was made and sales letters and follow-up letters were also sent.

Due to the limited number of financially capable home owners, the contractor decided that a complete canvass would not be profitable. However, the original list of prospects was by no means exhaustive and new names were occasionally added.

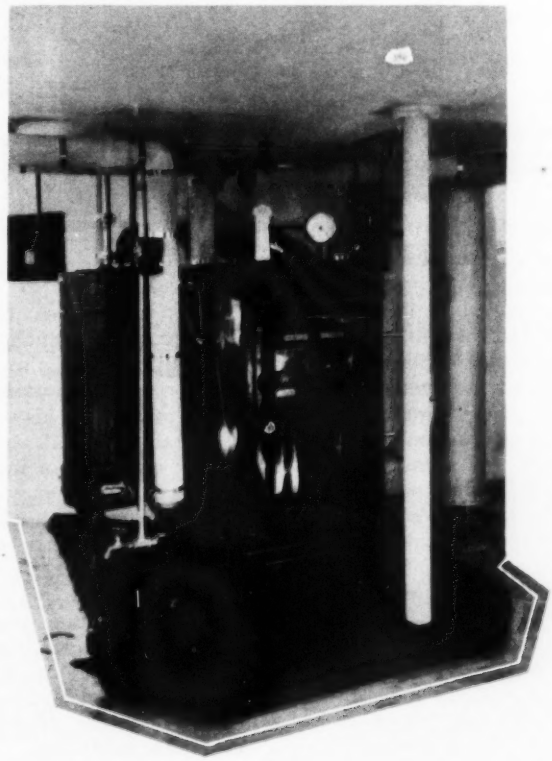
The sales letter and follow-up letter were responsible for several out-of-town sales, but after the first large campaign they were of no great significance, as it was easy to arrange personal interviews and thus take care of all prospects.

Reaching Out for Sales

When the original list of prospects was almost entirely turned into sales, it was necessary for the contractor to hunt more prospects. One method which was found very effective was that of arranging interviews with widows and maiden ladies living by themselves, and explaining the work automatic heat would save them. Sales were invariably made at these homes where there was no male help to take care of furnaces, since women did not relish firing and tending to a heating system.

Oftentimes the contractor would go out to inspect some work his men had just completed in a home and he would incidentally broach the subject of oil heat to the housewife or home owner. This method resulted in a number of sales.

When the contractor was asked how many calls on the average were necessary in order to close a sale, he replied that he could not tell off hand. When he listed the calls made on the eighteen prospects that had been sold within the last two seasons, he found that the interviews ranged from one to twelve in number. Even when taking an average of the total number of calls made on all prospects, the result would not be reliable. One prospect bought a burner when interviewed the first time. The sale was made by telling the prospect that his friend had just installed one of these burners. He relied enough



A residential oil burner installation that made a satisfied user

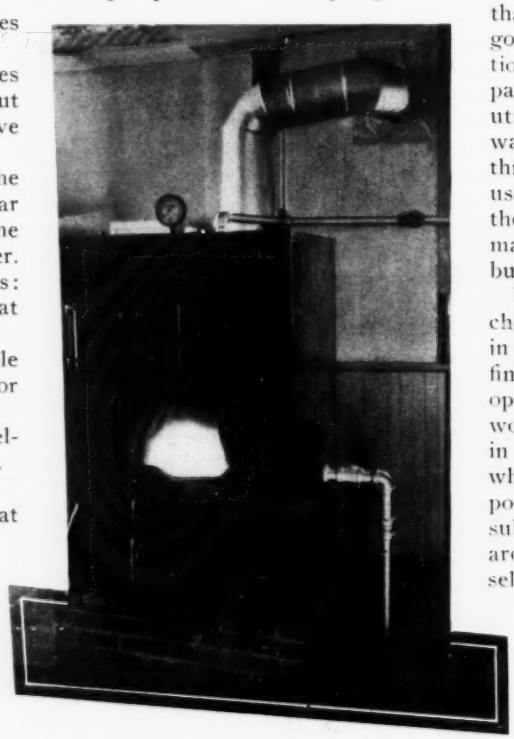
AUTOMATIC HEAT SECTION

upon his friend's judgment so that no further investigation was necessary. One doctor in town was visited every day for a week and each time he asked hundreds of questions; looking into every detail and feature of the burner. He did not rely on what others had done, but found out for himself. He was sold after about eight calls. There is one prospect in the city who has told the contractor that he wants to install his type of burner, but he can not afford the price just now. The contractor has been talking to him off and on for about one year and it may be another year before the prospect buys.

The Sales Arguments

These are the principal sales arguments which the contractor uses in interesting oil burner prospects:

1. No Carbon or Soot: Does not form carbon or soot.
2. Quiet: The burner makes itself known, not by roaring, but by giving you unobstructive heat.
3. Longer Boiler Life: The tip of the horizontal, circular flame is evenly applied to the water legs all around the boiler.
4. Burns Low-Priced Oils: Burns oil that is high in heat units.
5. Odorless: It is impossible to detect any odor of oil or smoke.
6. More space added to cellar, which may be modernized.
7. Clean: No dirt or ashes.
8. Automatic: Thermostat controls heat.
9. Healthier: Uneven heat causes discomfort and illness.



This is the demonstrator installation in the store

When discussing costs and upkeep with his prospects, the contractor usually uses the installation similar to the one in which his prospect lives as a basis for actual figuring. No wild guesses are made, but the contractor tells the prospect what his electric bill and oil bill will be in proportion to what a similar installation cost. This gives the prospect a definite idea of cost and upkeep. By allowing for the difference in radiation in the two houses, and proportioning the cost accordingly a reliable estimate can be made.

This contractor-dealer has another method of securing prospects, which is rather indirect, but effective. He has a model home equipped throughout with automatic heat. He often invites people to come out and inspect the plumbing and heating. He shows them the cellar which is fixed into a large reading room with the boiler in the center. All pipes and pipe covering are painted, making an attractive and cozy place to spend one's leisure time. This always takes the eye of the prospect and immediately he asks about the boiler and oil burner. Once his interest is aroused, a great part of the sale is over.

Laying Groundwork for Satisfactory Jobs

This dealer has always found it advantageous to ask the prospective customer if he might inspect his present heating installation and estimate the type of burner which would take care of his radiation. This examination is absolutely necessary and should be done by a heating engineer, for if the dealer installs the wrong type of burner for the customer and it does not function properly, everybody will know that such and such a burner had to be torn out of a home because it was no good. A dissatisfied user is a hard knocker and if he was sold a burner which had no place in his heating system, he has a right to be. In attempting to make sales this contractor remembers that satisfied customers are his goal, for not only is his reputation at stake, but also the company manufacturing and distributing the burner. The easiest way to get new prospects is through enthusiastic, satisfied users, who must tell everybody they meet about their fine automatic heating system and oil burner.

Upon the examining and checking up of heating systems in the home, the contractor often finds boilers which could not operate with an oil burner. He would not install an oil burner in a dilapidated heating system which had air-trapped mains and pocketed branches, for the results would not be up to standard. This often results in the selling of new boilers and sometimes in the changing of entire heating systems.

The contractor never hesitates to tell his prospects that the burner, even though automatic, needs careful attention and oftentimes adjustment.

After the burner is installed, the dealer is not through. It is he who must see that this burner is carefully serviced throughout the year. Each installation contract contains one year's free servicing. In order to do this his special trained man takes care of installation and service calls. This man is available at any hour of the day or night during the year in case of emergency. His emergency services are seldom required, but when they are, his skill and knowledge of the operative parts of the burner enable him to put the burner in operation within a few hours. This man, in addition to installing and servicing, is also a salesman. He works on a straight salary basis plus a liberal commission for selling oil burner installations. It affords him steady work the year round and also a steady income. He has plenty of time in the off-season months to canvass and interview prospects.

Buyers and users of the oil burner are encouraged to have their burners and boilers cleaned and if necessary, repaired once a year. The dealer carries all necessary repairs and supplies on hand so that a quick replacement can be made without much waste of time.

Watching Service Problems

The contractor keeps a service record of each oil burner installation. This sheet shows how many service calls were made during a week, month or season. It also tells just what trouble was encountered and how much time was consumed in making adjustments. When the results of a number of these sheets are tabulated, the contractor can diagnose his service calls and constantly check up on the performance of his installations.

The concern in question has been very particular about the men hired to handle, install and service their oil burners. The contractor has accompanied his men to demonstration schools operated by the company whom he represents and sees that they are taught the fundamentals of salesmanship and the mechanics of the burner. He also takes his men to

In the basement of the contractor's home

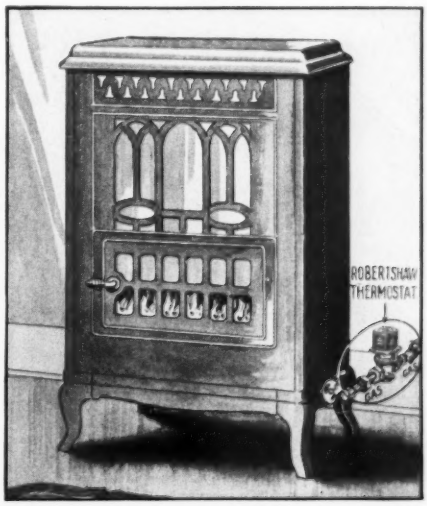
oil burner conventions in order that they may become better acquainted with this market, thus bettering their understanding of the product they are handling. Folks do not buy material or goods from persons who do not know how to use them let alone sell them. The contractor insists that his men know how to disassemble the burner he sells and explain each part and its use.

There is one particular scheme that the contractor has worked out and has proved very successful in selling more burners and establishing good will. In the contract for the sale of the burner he has agreed to repaint and repair all heat pipe covering, repaint the return lines, other exposed pipes as well as the boiler itself. This always pleases the customer and also makes his cellar look entirely different. The advantages easily overrule the added expense since the buyer now has a clean and neatly arranged cellar to show to his friends. A job well done wins other customers and prospects, thus making an endless circle of satisfied users of automatic heat.

Any person submitting a prospective customer for oil heat is given a gift of some valuable nature provided the person bearing the name submitted buys a burner within a certain length of time.

ROBERTSHAW
SPACE HEATER
thermostat

AUTOMATIC HEAT SECTION



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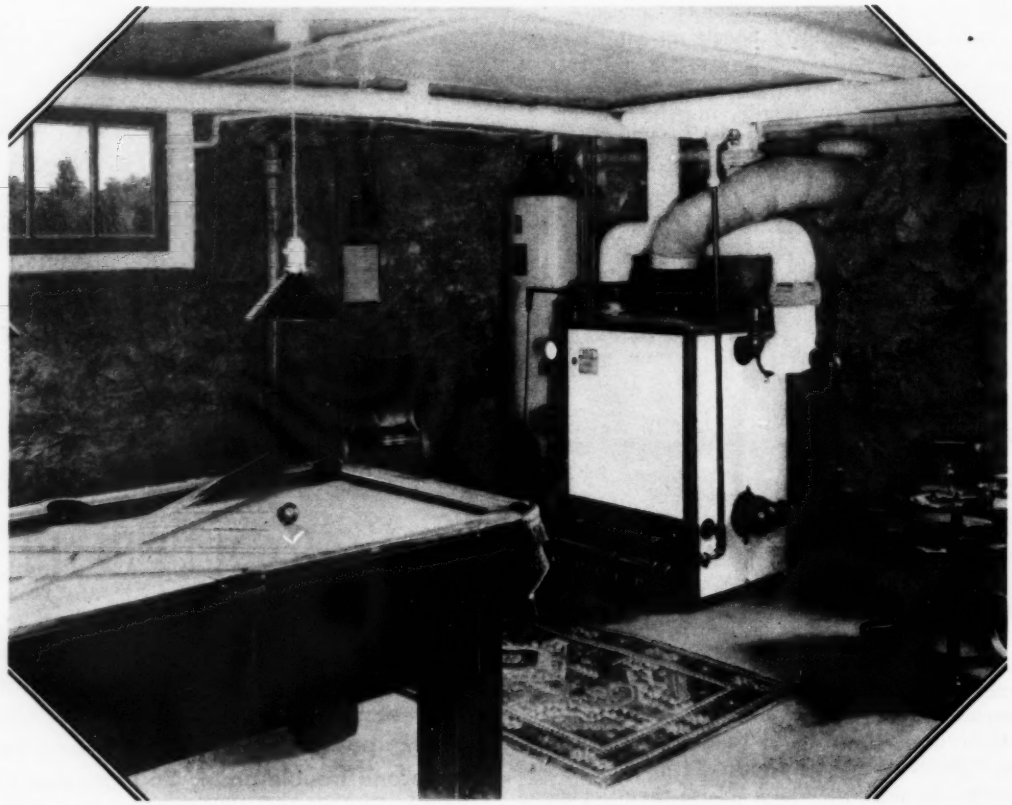
AUTOMATIC HEAT SECTION

Getting *the* Woman's Viewpoint *on* Automatic Gas Heating



A staff reporter interviews a housewife on gas for home heating

PLUMBING and heating contractors, manufacturers, and public utility officials have frequently expressed themselves in print concerning gas-for-house-heating, but inasmuch as the ultimate consumer, particularly the housewife, will decide the fate of this modern heating system, we hunted up a home-manager who has used gas fuel, to find out what she thinks of it for central house heating purposes. Here is a photograph of her modernized cellar, showing a gas-fired boiler installed in 1930, which functions with steam radiation in a ten-room house at 67 Vernon avenue, Mt. Vernon, N. Y.

"I never passed a more enjoyable winter than last," said Mrs. Fred Berry, in whose home this gas boiler was installed. "I would certainly insist upon a gas-for-house-heating plant being listed among the specifications, were we to build another home, because of the super-heating comfort provided by this system.

Rates for Heating

"We utilize gas for cooking, refrigeration, space heaters and other purposes and the local gas company offers a gas boiler customer the benefit of the special 60-cent house heating rate on all gas appliances used, whereas, the rate would be $1.20 otherwise. It is difficult to compute the fuel saving on these appliances because of this reduced rate, nevertheless, it amounts to a sizeable sum in a household like ours at the end of the year, and this saving in all fairness, should be deducted from the gas boiler expense account. In the household where gas is used for general housekeeping purposes, the home-owner should take this saving into consideration when computing the cost of gas against other fuels.

"In a home where the owner employs a furnace ten-

der, a gas boiler may be no more expensive to maintain than a coal boiler, and the former will give far greater satisfaction, because even though a furnace man is supposed to take care of a furnace, the home-owner or the housewife is still called upon to tend the fire during the day. The reason is obvious. A furnace man comes around in the morning, loads up the fire, and does not return until night when he banks it. This procedure never assures uniform nor efficient heat and of course, extra coal is burned. Even with a furnace man tending our fires, we were never satisfied with coal heat and this statement, I believe, would hold true for many other home-owners employing furnace men to stoke their fires. If it blows up cold in the middle of the day or the temperature rises appreciably, if card parties or other functions make it necessary to maintain a hot fire until late at night, the job of furnace-tending falls upon the man of the house or his wife.

"After a furnace man makes his regular call, he does not return to adjust the fire to marked temperature changes nor to suit the social activities of the householder. Where a home-owner employs a furnace man, he can save this wage and have a cleaner, more wholesome and far more convenient heat with gas fuel at practically the same or even less expense than with coal, if all factors are considered. I can highly recommend gas-for-house-heating to every home-owner, and believe that, in a few years to come, it will be one of the most popular house heating fuels."

A New Cellar

"We remodeled our cellar after installing the gas boiler, which not only increased the value of the property, but furnished additional living quarters. The cellar comprised a game room, a stockroom, lavatory and laundry, all comfortably heated, despite the fact that there is no radiation in the basement, the heat from the pipes and the boiler being sufficient to keep the place comfortable. The decorations were not expensive, but they made a fairyland out of the old coal bin arrangement. The walls were built up with a heavy texture wall paint, then mottled with a two-tone effect in gold and cream. This modernized cellar is certainly a cozy place to be on cold winter nights. In my opinion, the four important factors connected with gas-for-house-heating are clean heat, wholesome heat, laborless heat and cellar modernization. All of our friends who inspected this gas boiler installation were delighted with it and some of them purchased similar heating plants."

This interview backs up the contention that there are gas boiler profits waiting for the plumbing and heating contractor who aggressively talks this product and cooperates with the local gas company in its sale and installation. The woman, so commercial experts tell us, influences ninety per cent of retail sales, and here you have the woman's viewpoint on the gas-fired boiler. It is certainly favorable and Mrs. Berry's remarks contain many good selling pointers for the contractor to use when talking gas boilers. This interview offered another interesting side-light on the attitude of the average housewife toward the plumber. W. F. Ozmon, plumbing and heating contractor, 258 South 4th street, Mt. Vernon, N. Y., made this installation and Mrs. Berry, without any coaching of any kind, praised him highly for his efficiency and courtesy.

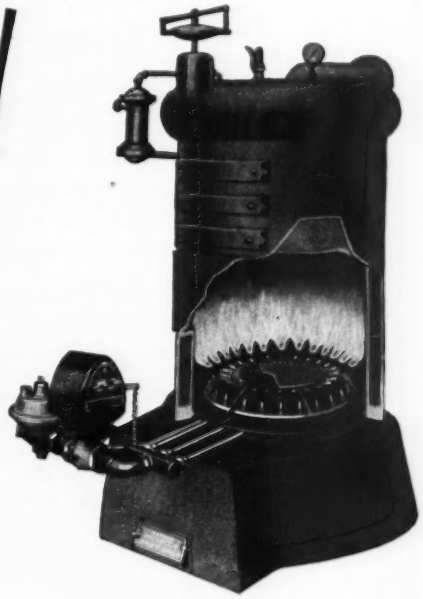
MODERN GAS HEAT *at* TIMELY LOW PRICES!

The American home owner wants AUTOMATIC HEAT, wants the kind of automatic heat that frees him from furnace and boiler nursing, frees his basement and home from dust, soot, ashes, dirt and fuel storage.

In a word, he wants GAS HEAT, automatic, clean, trouble-free, gas heat but he wants it at a price in keeping with his pocketbook. No matter how modest the home, it can have all of the conveniences of gas heat at an original installation cost that is low if you install BARBER Automatic Jet Gas BURNERS. No costly replacements of equipment—goes in quickly and simply on any boiler or furnace job. Every installation *tailor-made* by us for the particular job. All you do is send us the Manufacturer's Name, the Trade Name and Number of the Furnace or Boiler. We supply the correct burner ready for installation.

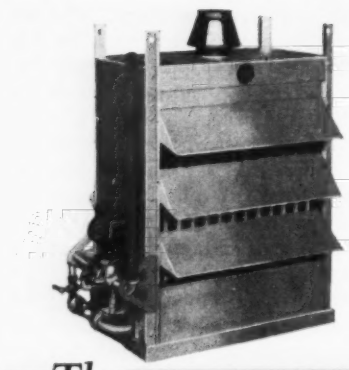
Get BARBER'S Dealer Proposition NOW. Start to sell Modern gas heat at timely low prices!

THE BARBER GAS BURNER CO.
3702-04 SUPERIOR AVE. CLEVELAND, OHIO



BARBER
Automatic Jet Gas
BURNERS

AUTOMATIC HEAT SECTION



The
PITTSBURGH GAS-FIRED UNIT
HEATER

With the Pittsburgh Gas-Fired Unit Heater you can greatly broaden your heating sales field.

It has so many distinct advantages such as ease of installation, maximum dependability and outstanding efficiency and economy, that it almost sells itself.

You really should investigate at once.

Automatic Gas-Steam Radiator Co.
Brushton and Thomas Sts. ▸◂ Pittsburgh, Pa.

GET IN ON
"The Big Swing"
TO
AUTOMATIC HEAT

Heating men everywhere are turning to the pages of AUTOMATIC HEAT in DOMESTIC ENGINEERING for the type of information you find in the pages of this issue.

Technical discussions on stokers, oil burners, gas heat and their accessories; merchandising stories packed with worthwhile sales help and articles which assist with financing.

These are the things which you will find in AUTOMATIC HEAT, the paper that will get you in on the big swing to automatic heat that is just getting under way. Don't miss a single issue . . . . .

Read
AUTOMATIC HEAT
in every issue of
DOMESTIC ENGINEERING

Orifices for Automatic Heat

(Continued from Page 66)

shape shown, with an accurately machined orifice in the center. The ears are used to enable the fitter to locate the orifice plate so the orifice will be in the center of the pipe. Piping orifice plates are often installed between flanges, as shown in Fig. 7.

"*First,* locate all orifice plates where they may be removed if necessary.

"*Second.* Do not make the orifices too large.

"As we have explained, if the orifices are too large a slight change in the installation of the piping may mean a serious error, whereas if the orifices are smaller the error will not be serious.

"*Third.* Do not make the orifices too small because the velocity of the steam flowing through them may be high enough to cause an annoying whistle.

"*Fourth.* Always install orifice plates in such a way

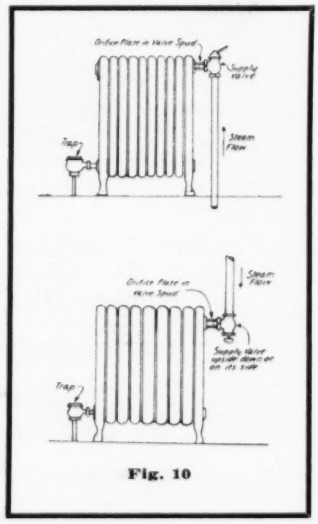


Fig. 10

that any water which may collect will flow through the piping with the steam.

"If the orifice plates are located so that the water tends to flow back against the flow of the steam, the water will accumulate on the discharge side of the orifice plate until it tends to cover the orifice. Then the steam will rush through the water causing clicking, pounding, gurgling and sometimes serious destructive water hammer. This condition is illustrated in Fig. 8.

"On the other hand, when the orifice plate is installed as shown in Fig. 9, the water flows with the steam.

"On the Anderson job, I believe the orifices are all located in the valve spuds. They should all be installed in the manner shown in the upper sketch of Fig. 10, except the one on the landing, which should be done as shown in the lower sketch. In either case any water that may be carried with the steam will flow through the orifices into the radiators. Likewise, any water which may collect on the discharge side of the orifice plates will flow into the radiators. The fact that in one case the steam flows down into the valve which is installed upside down, is unimportant because the water and steam always flow in the same direction."

The Age of Hand Firing, Like the Age of Hand-Wound Clocks, Is Passing

JUST a few years ago, electric clocks for the average home were unheard of. Today, they are big sellers.

Just a few years ago, automatic heat for the average home was prohibitive because of cost. Today, it is becoming standard equipment for even the most modest homes.

A few years more and hand firing will be as obsolete as horse cars and parlor stoves.

The public wants automatic heat, whether it be oil, coal or gas, and it will get it.

It will get it from you, the foremost automatic heat dealer serving the American public today.

It will want your knowledge of heating, fuels and combustion. It will demand the benefit of your experience in the purchase of oil burners, gas heating equipment, stokers and all their accessories.

Most of you are prepared to help in creating this demand and selling it after it has been brought to its height.

Some more of you want more information on automatic heat. You'll get it in these pages in every issue of DOMESTIC ENGINEERING.

And we invite your inquiries as to the best type and make of automatic heat for you to sell in your community. Write us for advice. Read AUTOMATIC HEAT.

AUTOMATIC HEAT
in
Domestic Engineering
1900 Prairie Avenue ✦ Chicago, Ill.

SUCCESS

THAT IS IMPORTANT TO

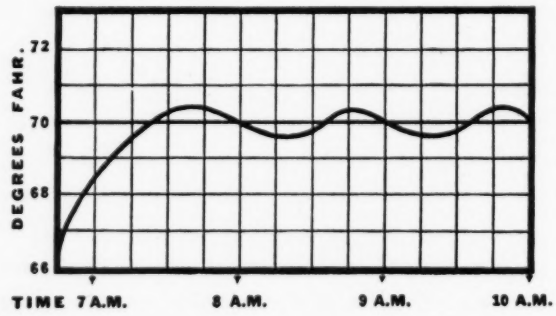
YOU

THE new General Electric Heat Regulator has met with instant and widespread favor. People never before interested in automatic heat-control have become customers or live prospects. They are talking about General Electric's new and exclusive features — features which make it possible to regulate temperature *with not more than ½ of 1 degree variation,* regardless of outside weather-conditions!

This success of the General Electric Heat Regulator is important to *you,* as a dealer, because it means new business for you. People have confidence in the familiar G-E monogram, and the products it is placed upon. They like to do business with General Electric dealers.

The regulator has many outstanding selling-points. Instead of drafts completely open or completely closed, it gives *graduated* control; thus preventing undesirable overshooting, or dropping 'way below, the temperature desired. It *anticipates* rises in temperature, and controls the heat-supply accordingly.

The single-range model sells for $85; the double-range, with electric timing for automatic day-and-night temperature-changes, for $125. Liberal discounts are offered. See this new product for yourself. Visit the distributor in your territory. Or write us direct for full information: Penn Heat Control Company, *National Distributors,* Franklin Trust Bldg., Philadelphia.



The temperature you want as long as you want it

The chart shows the amazing accuracy of the new General Electric Heat Regulator—accuracy such as never before available in household-heating. It is made possible solely by the exclusive G-E features. The room-thermostat is neat, small, and fits admirably with any decorative scheme. (Double-range model illustrated.)

GENERAL ELECTRIC

HEAT REGULATOR

FOR EVERY TYPE OF HEATING SYSTEM

About Folks You Know

Supply News

What's Doing In Business

For Manufacturers, Wholesalers and Salesmen

Central Supply Association Perfects Merchandising and Credit Plans

The officers and trade relations committee of the Central Supply Association held a two-day meeting at French Lick, Ind., on December 13 and 14 to perfect plans for the association's merchandising and credit activities during the current fiscal year.

A simple, direct, yet comprehensive program of activity has been adopted, and complete details will be furnished in the course of the next few weeks.

◆

Cambridge, Mass., Wholesaler Moves to Larger Quarters

The Monroe Co., plumbing and heating wholesale firm of Cambridge, Mass., has announced that on January 1, 1932, its Cambridge office and warehouse will be moved to 180 Green street, Jamaica Plain. The new quarters will provide increased warehouse facilities.

◆

Kieley & Mueller, Inc., to Open New Plant Soon

Kieley & Mueller, Inc., are completing arrangements for production at their new plant, 40 Paris street, Newark, N. J., where 25,000 sq. ft. of floor space will be devoted to the manufacture of the company's line of steam, water and air specialties. Production schedules call for work to start shortly after the first of the year.

The new plant is only 20 minutes from New York City. The main office of Kieley & Mueller will remain where it has been for more than half a century, at 34 West 13th street, New York City, where also a warehouse stock will be retained.

The new plant is modern in design. The space and physical layout of equipment is arranged to facilitate operation.

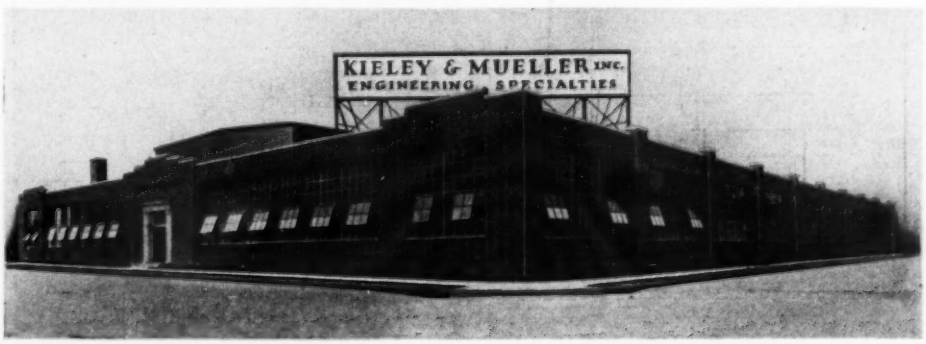
Brooklyn Wholesalers and Gas Officials Discuss Gas Appliance Sales

AN IMPORTANT meeting in connection with the new relationship being built up between the plumbing and heating industry and the gas companies, covering the sale of gas appliances, was held at the Hamilton Club, Brooklyn, N. Y., December 17. Representatives of several outstanding wholesalers of Brooklyn and officials of the Brooklyn Union Gas Co. were present.

The purpose of the meeting was to discuss the wholesaling of gas appliances both under the present plan in which the bulk of jobbing is being conducted by the utility and under a plan in which the gas company would cease its wholesaling activities with the consequence that established plumbing and heating supply houses would stock and merchandise gas appliances.

While no official action was taken at the meeting many problems of competition, distribution and merchandising were discussed. The gas company clearly stated its desire to cease wholesaling activities, but pointed out that some assurance must be given that quality merchandise would be handled by supply houses and their sale pushed over cheap, competitive products. This assurance was made necessary, according to the gas officials, because in the past, low grade and inferior appliances have not only endangered the health and lives of the users, but have failed to stand up under hard usage with the result that the consumers have become erroneously prejudiced against gas and gas appliances. It was the endeavor to overcome these unfair and unnatural barriers these officials stated that caused utilities in a great many cases to enter wholesaling.

The market for water heaters in the Brooklyn territory was discussed at length and some interesting figures were brought to light. There are only about 26,000 gas



The new plant of Kieley & Mueller, Inc., at Newark, N. J. Manufacturing operations are expected to start shortly after the first of next year

water heaters in the territory although there are some 359,000 one and two family houses. Coal fired water heaters led by far.

With the increase that could be brought about through proper merchandising, it was stated that the total gas appliance business in the territory should run up within the next few years to somewhere near a seven million dollar gross as against the present two million dollar gross.

Those present at the dinner were: H. Gesner and M. Weinsier of Saltser & Weinsier, Inc.; B. F. Gilmour of B. F. Gilmour Co.; F. R. Peterson of J. D. Johnson Co.; George Tish of George Tish & Co.; George Foster of The George Foster Sales Agency; Hugh Cuthrell, Brooklyn Union Gas Co.; James F. Howley, Jr., manager, dealers service division, Brooklyn Union Gas Co., and several other gas company representatives.

◆

E. S. A. Secretary Tells Need for Changes in Sherman Law

In a bulletin issued by Secretary Hanley of the Eastern Supply Association, members are urged to interest themselves in securing what the bulletin termed "necessary amendments" to the Sherman-Anti-Trust Act in order to permit business to be carried on in keeping with modern industrial progress.

◆

Reading Iron Co. Moves Boston Office

The Boston, Mass., office of the Reading Iron Co. of Reading, Pa., has been moved to Room 305, Consolidated building, 250 Stuart street. John G. Ross is manager of the Boston branch.

◆

Schley Co., Inc., Opens New Office

The Schley Company, Inc., Pittsburgh, Pa., has announced the opening of a downtown office in the Conestoga building, Wood and Water streets, Pittsburgh. The Schley Company represents the following firms: Weil-McLain Co., Fitzgibbons Boiler Co., Illinois Engineering Co., Unit Heater & Cooler Co., and Kroeschell Boiler Co.

Instrument Manufacturers Merge

The pyrometer division of the Wilson-Maeulen Co., Inc., has merged with the Foxboro Co., Inc., of Foxboro, Mass. The first mentioned concern manufactures electric indicating, recording and controlling pyrometers and electric resistance thermometers.

The Wilson-Maeulen Company's line of pyrometers and controllers will be built in the factory at Foxboro. The hardness tester that has been manufactured by the Wilson-Maeulen Co. will hereafter be built and sold by the Wilson Mechanical Instrument Co., which succeeds the mechanical instrument division of Wilson-Maeulen Co., and continues in the same factory in New York City.

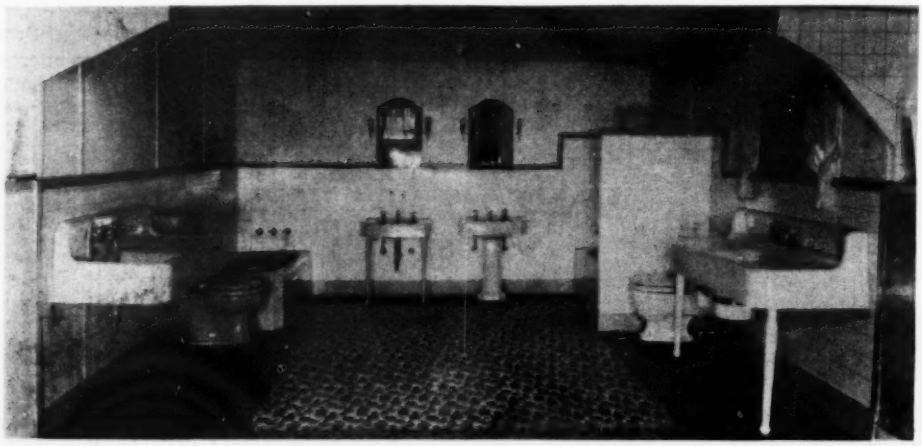
◆

Robert H. Morse Heads Fairbanks, Morse & Co.

According to an announcement just made public by Fairbanks, Morse & Co., Chicago, Robert H. Morse, formerly vice chairman of the board of directors, has been elected to the offices of president and general manager to succeed W. S. Hovey, who resigned on December 1.

Robert H. Morse

In 1895 Mr. Morse entered the employ of Fairbanks, Morse & Co., the firm founded by his father, C. H. Morse. Here he began his career with the company as an apprentice at the Beloit factory (then known as Fairbanks-Morse Manufacturing Co.), and, except during his military service, when he was Lieutenant-Colonel in the Signal Corps, has been with the company continuously since that time. In the thirty-six years, he has been employed in various positions as salesman, department manager, branch house manager, sales manager, president of the manufacturing division, vice president in charge of purchases, first vice president, vice chairman of the board and now president and general manager.



This attractive exhibit of plumbing fixtures was maintained by the F. E. Georgia Supply Co., plumbing and heating wholesale firm of Oklahoma City, Okla., at the "Better Building Home Exposition," which was held recently in Oklahoma City

Spencer Heater Company Pays $150,000 Dividend

A dividend of $150,000, covering the fiscal year ended November 30, has been paid by the Spencer Heater Co., Williamsport, Pa., to its parent organization, the Lycoming Mfg. Co., which holds all of the Spencer stock.

Spencer Heater Co., despite the marked decrease in sales of the heating industry as a whole, has experienced its record year in 1931 showing substantial gains in unit sales and profits. The company earlier in the fall announced several new heating units.

◆

Refrigerating Engineers Will Share Honors at Heating and Ventilating Exposition in Development of New Products

Cleveland is preparing to fulfill its part as the capital of the heating, ventilating and air conditioning world when the Second International Heating and Ventliating Exposition opens its doors in that city, January 25-29, 1932, in conjunction with the annual meetings of the American Society of Heating and Ventilating Engineers and the American Society of Refrigerating Engineers.

While the A. S. R. E. has been in existence since 1904, it is only within recent years that the profession has become an important factor in the heating and ventilating field. Air conditioning involving the use of refrigeration has been responsible for this development. Today the two organizations are close together in some phases of their activities. This is true particularly with regard to the air conditioning of theaters and other public buildings, and to a lesser extent, with regard to process work, such as cold storage and other low-temperature installations.

Just recently the development of unit air coolers has injected another element into a situation already replete with interesting possibilities. In some cases these units are the products of strictly refrigerating equipment manufacturers. Their introduction has immediately had the effect of bringing such manufacturers directly into the field of cooling and thus of ventilating.

The display of portable unit coolers will be an interesting indication of the way each Heating and Ventilating Exposition will serve as a definite record of the industry's progress. In the years to come it will be easy to determine various eras in heating, ventilation and air conditioning by referring to the different expositions.

An interesting confirmation of this statement is contained in a list compiled by Samuel R. Lewis, of Chicago, for the American Society of Heating and Ventilating Engineers, of the new projects developed during the previous year. It is significant that a majority of these new products will be on display at the Second Heating and Ventilating Exposition. They include such up-to-date equipment and appliances as unit boilers, new types of automatic boiler water feeders, threadless fittings for copper pipe in which the joints are made by solder applying law of capillary action, heaters which fit below floor-line in houses which have no basements, new methods of converting coal-burning heaters into gas-fired installations, gas producers and boilers in single units providing extra gas for cooking and water heating and burning coke or anthracite coal, relative humidity recorders, new automatic humidity controls, new building insulation materials combining, in one type, insulation, paper and metal lath, automatic rotary oil burners designed for burning oil as heavy as No. 6, as pressure regulators, copper cast radiators, finned heating risers, master units for zone control with program dials for automatic control of week-end temperatures, combination float and thermostatic steam traps for unit heaters and for high pressures, unit heaters with high-pressure heating elements, radiator valves capable of recirculating the contents of radiators and window switches for opening and closing radiator valves when windows are opened.

Business Personals

FRED GOOD has just been appointed district manager in the state of Ohio for Pierce, Butler & Pierce Mfg. Corp., of New York City. Mr. Good was previously in charge of the corporation's branch in Akron, Ohio.

A. S. GRANZEN has joined the New York City office of C. A. Boyle & Co., Inc., of Chicago, Ill. Mr. Granzen was formerly connected with the Brunswick-Balke-Collender Co., of Chicago.

GORDON HAGAN has been appointed purchasing agent for the Minneapolis, Minn., branch of A. Y. McDonald Mfg. Co., of Dubuque, Ia. Mr. Hagan has been connected with the Sioux City, Ia., branch of the McDonald company for the past three years.

GEORGE R. ACHESON, JR., has been made manager of the New York City office and warehouse of the Acheson Mfg. Co., Rankin, Pa.

F. C. NEUPERT of Seattle, Wash., has been appointed representative in the states of Washington and Oregon for Frost Co., Kenosha, Wis., and Taylor Forge & Pipe Works, Chicago, Ill. Mr. Neupert's headquarters are in the Central building, Seattle.

E. M. PATTISON, western sales manager of the Silent Glow Oil Burner Corp., Hartford, Conn., has been elected vice president in charge of western sales. Mr. Pattison makes his headquarters in Chicago.

H. E. RUSCH, supervisor of the Performance Report division of Johns-Manville Corp., addressed a meeting of the Building Trades Employers' club at the dinner given by that organization in New York City on November 11. The subject of Mr. Rusch's talk was based on how his company has developed its policy of helping the prospect to buy.

W. C. HANSON, export manager for the Norwood Engineering Co., of Florence, Mass., has just been placed in charge of sales in the New York metropolitan territory for the company's line of swimming pool, industrial and municipal filters and accessories. Mr. Hanson's headquarters are at 50 Church street, New York City. He will continue to act as export manager.

J. H. SEYMOUR of Kansas City, Mo., has been appointed representative of the Eljer Co., of Ford City, Pa., in western Missouri and the states of Nebraska and Kansas. He will make his headquarters at 3041 Olive street, Kansas City, Mo.

Pry Open Their Purses With This Powerful Lever

HERE'S a lever powerful enough to pry open the toughest prospect's purse.

It's the entirely new line of Burnham Cast Iron Radiators . . . used either concealed or exposed, or hung on a wall.

These Burnhams have all the advantages of radiators of other metals, and they hold heat *much longer*.

The trim little Burnhams make ordinary bulky cast iron radiators look 20 years out of date — yet do *exactly as much heating* in one-third less space.

They'll fit into *any* installation you may figure on. Use their powerful appeal to prospects to pry open those tight purses.

As a first step, get our literature and prices.

P. S. Yes, we have other types of "thin" radiation. That's why we're so sold on cast iron, at cast iron prices.

Burnham Boiler Corporation

IRVINGTON NEW YORK

Representatives in all principal cities of the United States and Canada

Price Tags Essential in Selling Plumbing and Heating Products

By R. MACFEE
Secretary-Treasurer, Central Supply Association

AN ANALYSIS of merchandising for the past thirty years brings out the fact that the buying psychology of the public today is very different from what it was in 1900.

Much greater demand has been made on the consumer's dollar; there are many more places for it to go today than there used to be; much greater value can be obtained today than in years gone by; the public has been trained to become more fastidious in its buying habits; and its desire for luxuries and higher grade necessities has been developed to a far greater extent.

All of these facts point to the development of new competition, not within specific industries but rather between various industries, because in spite of the much greater variety and range of products obtainable today they are still only purchasable by the same consumer's dollar as existed years ago.

This wider range of merchandise embodies such luxuries as automobiles, radios, etc., and at the same time such necessities as home furnishings, sanitary appurtenances, food, shelter, etc., and yet in most instances it seems strange to have to admit that the higher type merchandising campaigns which have been most successful in training the buying public in where they shall put their dollar have been on the luxury side of the picture, as for example, radios and automobiles, and it almost seems as if the more essential a piece of merchandise is to the actual health and welfare of the public, the less forceful merchandising effort has been put behind it.

This has been particularly true in our own industry and we can well afford to tear some pages from the book of success of some other industries and begin now to follow the plans which have really been responsible for building the "right of way" along which the purchasing public of today operates its spending train of thought.

The ice industry has conclusively proven that competitively speaking every electric refrigerator sold increases the output of manufactured ice and this result has been achieved by recognizing that the refrigerator was a new type of competition which seriously threatened to thwart the ice buying public's dollar from their coffers, so they immediately set about to find out how other industries were making the necessary appeal and by following their findings achieved the foregoing result.

In the last analysis, the buying public of today is accustomed to being told all about the article in which it is to become interested. After the desire has thus been created it is in the habit of comparing what its dollar will buy in that particular type of merchandise with what it will buy in other types. It is then accustomed to stepping into a clean, attractive establishment which seems to make it want to stay when once there, and it is used to experiencing absolutely no difficulty in knowing at a glance what the particular merchandise is going to cost if bought.

The Fundamental Features of Merchandising

These fundamental features of merchandising are responsible for the tremendous success in the past thirty years of the department store, the chain store and the independent merchant who has been wise enough to adopt measures to meet these requirements.

Plumbing and heating supplies' wholesalers who operate show rooms and master plumbers who do likewise must first learn that their establishments must be made attractive to instill interest in the prospective purchaser. It must never be forgotten that while "friend husband" pays the bills in the majority of instances the appeal has to be made primarily and basically to the lady in the transaction.

It is not known definitely what percentage of women finally write the ticket in the purchase of plumbing fixtures or heating equipment, but it is definitely known that 66 per cent of the automobiles purchased today are decided upon by the women, and that 59 per cent of the expensive radios of today are purchased on the decision of the women. It must also be remembered that the same women are making their purchases of other merchandise in department stores, chain drug stores, chain food stores and other establishments which have already recognized and successfully cater to the developed desires of their purchasing customers. So it is

felt that it behooves the plumbing and heating industry to awaken to the same definite trends in merchandising its products.

The first essential is therefore clean, attractive establishments, clean windows, inviting window displays, advantageous displays of merchandise inside, well lighted establishments and the creation of an atmosphere which will make it pleasant for the purchaser to stay once he gets in.

Merchandise Should Be "Price Tagged"

Each article on display, both inside the establishment and in the windows, should be prominently tagged with its price and the price tag should be affixed on the article so that it can be easily seen and read. As a matter of fact, the tag should be such as the purchaser can "read while he runs."

This will make it possible for the purchaser to immediately visualize in his mind just what value he will obtain for a dollar spent on our merchandise and compare it with what the same dollar will buy in other merchandise which may not be so essential to his health and welfare.

It is not to be denied that our industry furnishes a product which is absolutely essential to the comfort, health and well-being of the buying public; that these essentials are not only restricted to the quality of merchandise purchased, but also to the craftsmanship necessary for their proper installation and future successful operation. In other words, the final utility for which the product is manufactured is not achieved unless it is correctly installed and thereby 100 per cent operation is insured.

For this reason, steps should be taken to demonstrate to the buying public the absolute necessity of obtaining for the dollar it spends the maximum utility possible by purchasing trade-marked merchandise behind which the manufacturer will always stand and having it installed by capable craftsmanship such as is obtainable through the employment of reputable master plumbers.

By adopting these merchandising principle so successfully demonstrated in other industries, the opportunity will be presented to the purchaser to compare the ultimate utility value obtained for the money thus spent with that which obviously would be obtained by the purchase of untrademarked merchandise which is installed by less capable workmen.

The pride of ownership must also be appealed to. When a purchaser buys an expensive car in preference to a cheaper one he is proud of what he has done because he believes his purchase to be the best, and every time he sees it he experiences a thrill of pride. When a purchaser buys a high class radio in preference to a cheaper instrument, every time he turns the dials he experiences a thrill of pride in the service the instrument renders. This same purchaser should be taught to experience the same thrill of pride every time he enters his bathroom and sees the quality merchandise which he has been wise enough to have installed properly, or when he steps into his basement and beholds the quality heating plant which has been purchased in preference to cheaper merchandise.

This pride of ownership can be experienced on low priced merchandise as well as the more expensive, provided the purchaser can be taught to appreciate that no matter what he buys, the manufacturer of the product will always stand behind his merchandise and that it will give 100 per cent satisfaction if properly installed by reliable craftsmen.

Let it be the slogan of the industry for the year 1932 and the years to follow, that the manufacturer, wholesaler and master plumber will co-operate to give to the buying public the maximum utility values for the dollars it will spend for plumbing and heating merchandise, and that every effort will be made to stimulate the desire of the public to purchase this type of merchandise and installation, making it as easy as is humanly possible to make such purchases.

◆

Willis H. Carrier Is Awarded Honor Medal

The John Scott medal, carrying a premium of $1,000, awarded annually through the city of Philadelphia for an invention adding to the "comfort, welfare and happiness of mankind," was presented on Tuesday evening, December 1, to Willis H. Carrier, chairman of the board of the Carrier Corp. of Newark, N. J., at the meeting of the American Society of Mechanical Engineers at the Hotel Astor in New York City.

Willis H. Carrier

Louis Heiland, secretary of the board of directors of City Trusts of the City of Philadelphia, made the presentation. Mr. Carrier, who is president of the American Society of Heating and Ventilating Engineers and former president of the American Society of Refrigerating Engineers, was awarded the medal upon the recommendation of the advisory committee of the board, for his invention of "process and apparatus for cleaning, purifying and humidifying the air."

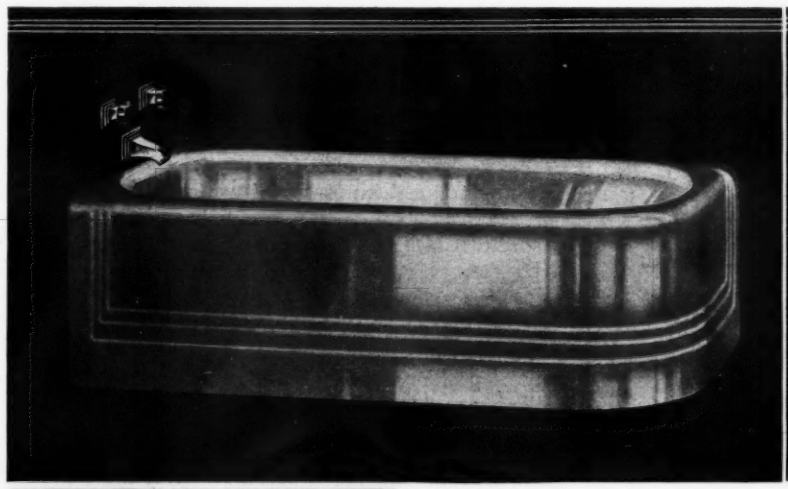
The Scott awards date back to 1816, when John Scott, a chemist of Edinburgh, Scotland, bequeathed to the city of Philadelphia the sum of $4,000, the income of which was to be "laid out in premiums to be distributed among ingenious men and women who make useful inventions."

Under an Act of the General Assembly of Pennsylvania in 1869 the fund, with other charitable funds in the care of the city, was transferred to the board of directors of City Trusts, which consists of twelve citizens appointed by the courts of common pleas. The Mayor of the City of Philadelphia and the president of the city council are ex-officio members of the board.

Mr. Carrier, who graduated from Cornell in 1901, was associated from 1901 to 1915 with the Buffalo Forge Co., Buffalo, N. Y., and he made his early experiments there with the humidity problem in a printing shop. In 1915, he organized the corporation he now heads as an engineering and contracting company specializing in air conditioning, cooling and drying in industrial work. He has done important research work

THE NEO-CLASSIC ENSEMBLE

now brings harmony to the bathroom



• PEMBROKE NEO-CLASSIC BATH • TOWERLYN NEO-CLASSIC LAVATORY

• TERISTON NEO-CLASSIC CLOSET

• Isn't it the best of salesmanship on your part to suggest *ensemble* designs of bathroom fixtures? Here is the "Standard" definition of a beautifully simple bathroom ensemble...the Pembroke Neo-Classic Bath, the Towerlyn Neo-Classic Lavatory, the Teriston Neo-Classic Closet.

• For the Neo-Classic motif—created for "Standard" by a designer of international reputation—is faithfully and uniquely carried out in lavatory, bath and closet. Nowhere else can you find a bathroom ensemble at once so restrained in feeling and yet so strikingly individual. The simplicity of the Neo-Classic motif adapts it to every type of home, large and small — whether furnished in the strictly period, the classic or the modern manner. At the same time, this attractive design imparts unusual character to any bathroom for which it is chosen.

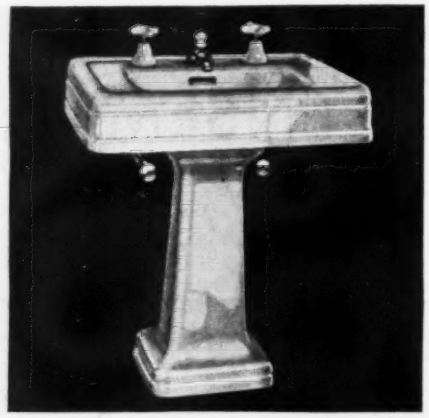
• Suggest to your customer that the Neo-Classic design be carried out in every bathroom fixture and in all the fittings!

Standard Sanitary Mfg. Co.

106 Sixth Street, Pittsburgh

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

"Standard" PLUMBING FIXTURES



Crane Corwith *Enameled Lavatory, C 2000-M1*

Meet price competition without sacrificing Crane quality

Even when price is the principal factor in securing a job, you can meet it without substituting inferior fixtures or foregoing the sales making features and the prestige which are an inherent part of every Crane product.

This *Corwith* enameled lavatory C 2000-M1 offers an example:

Its design is similar to the more expensive vitreous china *Corwith* lavatories found in the finest homes.

Its *Securo* combination waste and supply is the same unfailing, quick-draining mechanism used on far more costly fixtures.

Yet, because it is made in enamel ware instead of vitreous china, its cost is moderate.

If you aren't thoroughly acquainted with the whole Crane line, go to your Crane branch manager or to the nearest Exhibit Rooms. See the Crane quality materials in every price range; get acquainted with the Crane specialty items whose sales are independent of building seasons or building activity.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO
NEW YORK: 23 WEST 44TH STREET
Branches and Sales Offices in One Hundred and Ninety Cities

in psychometry and evaporation, and several of his papers have been published by the American Society of Mechanical Engineers.

The first broad application of air conditioning was in the industrial field in the manufacture of products where controlled conditions of temperature, humidity and air cleanliness were an essential of production. Today it is in use in more than 200 different industries, covering approximately 3,000 factories, mills and manufacturing plants in various parts of the country and in more than 300 motion picture theatres.

◆

How Refrigeration Is Applied to Air Conditioning

The annual meeting of the Pittsburgh Chapter of the American Society of Heating and Ventilating Engineers was held on December 7. Fifty members and guests were in attendance when President Houghten called the meeting to order.

President Houghten presented two out-of-town guests who are members of the national society. C. W. Presdee of Chicago, and S. E. Larson of West Orange, N. J.

President Houghten appointed G. S. McEllroy to serve on the committee on unemployment established by the national society. He asked those members who know of positions open, or of unemployed heating and ventilating men, to get in touch with Mr. McEllroy.

The nominations made by the committee consisting of F. A. Gunther, P. A. Edwards and W. W. Stevenson were approved and the following officers were unanimously elected: president, R. B. Stanger; vice president, F. C. McIntosh; secretary, J. L. Blackshaw; treasurer, H. B. Orr; board of governors, F. C. Houghten, G. S. McEllroy and H. Lee Moore.

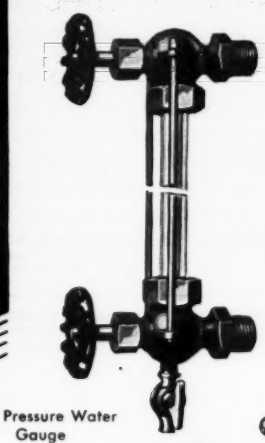
President-elect Stanger addressed the meeting, expressing the hope that the new year will see a strengthened chapter working for the good of the profession and for the parent society.

The meeting was addressed by John R. Hertzler, manager of the air conditioning department of the York Ice Machinery Corp. in the New York district, who delivered an interesting and instructive illustrated talk on "Refrigeration as Applied to Air Conditioning." Mr. Hertzler told some of the early history of air conditioning, which he said, began with the work of Joseph McCreary, who in 1896 planned to refresh air by passing it past plates over which water flowed. By using slides, Mr. Hertzler illustrated many of the bulky early types of refrigerating machines and compared them with the compact modern machines of identical capacities. He showed the arrangement and operation of a typical air conditioning system, and explained different types of refrigeration plants, using ammonia, CO_2, and F12 cycles. The component parts of refrigerating plants—compressors, evaporators, and condensers were illustrated and discussed in detail. In concluding his talk, Mr. Hertzler summed up the factors which must be considered in the selection of a refrigerator. These are: required load, load factor, basis of fixed charges, hours system is to be used, operating charge, flexibility of operation, space utilized, dependability, safety and noise.

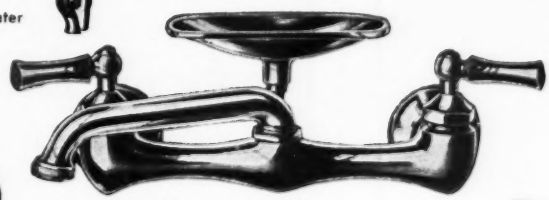
NOW

is the time to go after

REPAIRS AND REPLACEMENT BUSINESS . . .



Low Pressure Water Gauge



Combination Sink Faucet

Combination Lavatory Faucet

DUE to the lack of new construction a considerable amount of remodeling is being done. All of which furnishes the field for a mighty lucrative repair and replacement business. Capitol Brass plumbing fixtures are ideal for this type of installation. Efficiently designed, built of the best materials and with the best of workmanship, you sell satisfaction every time you sell a Capitol Brass unit. And a satisfied customer means a larger repeat order later on. Capitol Brass makes a complete line of plumbing and heating fixtures which are reasonably priced throughout. Get the details from your nearest jobber.

Bohn Aluminum & Brass Corporation

CAPITOL BRASS DIVISION

MANUFACTURERS OF BRASS VALVES, BOILER TRIMMINGS AND PLUMBERS' BRASS GOODS

DETROIT~MICHIGAN

Death of Charles G. Noble

Charles G. Noble, secretary and director of Bailey-Farrell Mfg. Co., Pittsburgh, Pa., died at his home in Pittsburgh on Friday, December 11. With the exception of a short period spent in the Middle West, Mr. Noble's entire business career had been with the Bailey-Farrell Mfg. Co., and his passing will be deeply felt by his many friends in the industry.

◆

Dick Reed Dies in Detroit

Dick Reed, of Detroit, Mich., who has been associated with the plumbing and heating industry for many years, where he had a wide acquaintanceship, died of pneumonia in Detroit on December 17.

Mr. Reed was at one time associated with the Pittsburg Water Heater Co., in the New York territory. He then joined the Standard Sanitary Mfg. Co. in Pittsburgh, Pa., and worked out of that city as a salesman, later being made manager of that company's branch in Youngstown, Ohio.

After spending some time outside of the plumbing and heating industry, he re-joined the Standard Sanitary Mfg. Co. in Detroit, where he held a responsible post in connection with the company's sales to wholesalers. Next, he was appointed manager of the company's branch in Indianapolis, Ind., which position he held for two or three years. He then returned to Detroit as a manufacturers' agent, representing among other firms, the Eljer Co., which position he held at the time of his death.

Harry N. Leadbetter Dies

Harry N. Leadbetter, president of the Dominion Radiator and Boiler Co., Ltd., Toronto, Ont., Can., a subsidiary of American Radiator & Standard Sanitary Corp., died on December 3.

Mr. Leadbetter was associated with the heating industry for over thirty years, beginning his career with the New York branch of the American Radiator Co. From New York he represented the company in Washington, D. C., then as resident salesman in Indianapolis, Ind., following which he became the Minneapolis branch manager.

In December, 1912, Mr. Leadbetter was made head of the Canadian interests of the American Radiator Co., and became president of the Dominion Radiator and Boiler Co., Ltd.

◆

P. & H. Club Plays November Tourney on Union League Course

A rare day of golf on a perfect course featured the November tournament of the Plumbing and Heating Club of San Francisco and the Bay Cities, when the members turned out on Thursday, the 19th, at the Union League Golf and Country Clubs, situated down the San Francisco peninsula in the rolling hills between Millbrae and the ocean. Although a 71-par course, it is one of the sportiest and most heavily trapped in Northern California.

While the second hole is the longest, 540 yards, the seventh is by far the toughest. Ross Clark, who turned

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wherever continuous, quiet operation at economical cost are the requirements .....

For any bathroom job, from the most modest home to the high priced residence and for stores, offices, institutions, schools, etc. Sherwood Ball Cocks offer the most economical means of assuring complete tank operation satisfaction

They mean first of all, leakproof operation, regardless of the water pressure and they mean operation that is free from all whistling and gurgling.

They mean the finest in brass and in manufacture. They represent everything in a quality ball cock that you have ever wanted

Furnished with any length shank desired by your jobber Order Sherwood Ball Cocks today and for all your future work

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Jefferson and Mt. Elliott Aves
DETROIT MICHIGAN
REPRESENTATIVES

We're Placing Credit
where it is due

in expressing our gratitude to those loyal customers who have helped make 1931 the greatest year in our history. We enter 1932 with renewed confidence and sincerely hope the coming year brings you a full measure of prosperity and worthwhile accomplishment.

PENNSYLVANIA RANGE BOILER CO.
Established 1895
24th and Washington Ave. Philadelphia, Pa.

in one of the four lowest scores of the day, did some good work with his irons in spite of the traps on the ninth, his score card showing a 95-20-75, thereby earning him top honors in Class A.

Division B was a dead heat between Morris Greenberg, 105-22-83, and Martin Doerr, 108-25-83, the resulting tie to be played off at the December tournament. By annexing the palm in Class C, Frank B. Mosher's 101-27-74 card also entitled him to possession, for the current month, of the C. F. Church Mfg. Co.'s silver loving cup. Permanent possession of this trophy will be awarded at the final tournament of the year, and will go to the man who has won the greatest number of monthly tournaments during 1931.

A delicious steak dinner was served in the club dining-room, a number of members driving down from the city to join the festivities. Member hosts for this occasion were Ross M. Clark, C. P. Hensley and J. D. Fleming.

Convention Dates

January 6 and 7, 1932—SOUTH DAKOTA—The annual convention of the South Dakota Retail Plumbers' Association, to be held at Mitchell, S. Dak., with headquarters at the Widman Hotel.

January 12, 13 and 14, 1932—WISCONSIN—The annual convention of the Wisconsin Master Plumbers' Association, to be held at Milwaukee, with headquarters at the Pfister Hotel.

January 19, 20 and 21, 1932—ILLINOIS—The annual convention of the Illinois Master Plumbers' Association, to be held at Springfield, Ill., with headquarters at the Abraham Lincoln Hotel.

January 25-29, 1932—A. S. H. V. E.—The annual meeting of the American Society of Heating and Ventilating Engineers to be held at Cleveland, Ohio, with headquarters at the Hotel Statler. Also the Second International Heating and Ventilating Exposition, at the Cleveland Auditorium.

February 2, 3 and 4, 1932—OHIO—The annual convention of the Ohio Master Plumbers Association, to be held at Cincinnati, with headquarters at the Netherland Plaza Hotel.

March 14 and 15, 1932—KANSAS—The annual convention of the Kansas Master Plumbers Association, to be held at McPherson, with headquarters at the Hawley Hotel.

March 14, 15 and 16, 1932—INDIANA—The annual convention of the Indiana Association of Master Plumbers, to be held at Muncie, with headquarters at the Hotel Roberts.

April 5 and 6, 1932—NEW YORK—The annual convention of the New York State Association of Master Plumbers, to be held in New York City, with headquarters at the Hotel Pennsylvania.

April 11-16, 1932—A. O. B. A.—The ninth annual convention and show of the American Oil Burner Association, to be held in Mechanics' building, Boston, Mass. Convention headquarters at the Statler hotel.

May 16, 17 and 18, 1932—H. & P. C. N. A.—The 43rd annual convention of the Heating and Piping Contractors National Association, to be held at Detroit, Mich., with headquarters at the Book-Cadillac Hotel.

June 21, 22 and 23, 1932—N. A. M. P.—The 50th annual convention of the National Association of Master Plumbers, to be held in New York City, with headquarters at the Hotel Pennsylvania.

COMING TRADE EVENTS

January 11, 1932—The annual Wisconsin state-wide Apprenticeship Conference, to be held at the Pfister Hotel, Milwaukee, Wis.

February 1-6, 1932—Six-Day Short Course for plumbing inspectors, instructors, master and foreman plumbers, to be given by the College of Engineering, University of Wisconsin at Madison, Wis., in co-operation with the Wisconsin Master Plumbers' Association.

June 20, 21, 22 and 23, 1932—Exposition of plumbing, heating and allied products, in connection with the 50th annual convention of the National Association of Master Plumbers in Madison Square Garden, New York City.

TRENTON
BRASS·PRODUCTS

Flush Valves made by Trenton, like all other Trenton Products are built to meet service requirements, and how they do, is indicated by their growing preference.

Are they making money and helping to create business for you? They can! Get them from your jobber or write us direct.

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Trenton » » New Jersey
Represented by ROLLIN C. WILSON
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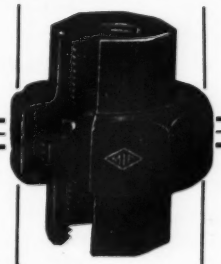


M I F

The M. I. F. Trade Mark on each Fitting is for your protection

BRANFORD UNIONS
BRASS TO IRON SEATS
BRANFORD 350* W. P.
BRANFORD JR. 250* W. P.

MALLEABLE IRON FITTINGS
STANDARD MALLEABLE
EXTRA-HEAVY MALLEABLE
RAILING FITTINGS
PLUGS & BUSHINGS

COPPER TUBE FITTINGS

Malleable Iron Fittings Co.
Branford :: Conn.

Tap the Main and "*Follow Thru*" with HAYS

This popular Erie Tapping Machine taps Water or Gas Mains under pressure and inserts any Corporation Stop.

Get acquainted with the complete line of Hays Plumbing Equipment. The Hays catalogue, "Street to Bath".....describes and illustrates every Hays product under the following divisions:—Tapping Machines, Iron Products, Water Service, Gas Service, Plumbing Brass Goods, Bath Fixtures and Copper Plumbing. You can start at the main and "follow thru" with dependable Hays products.

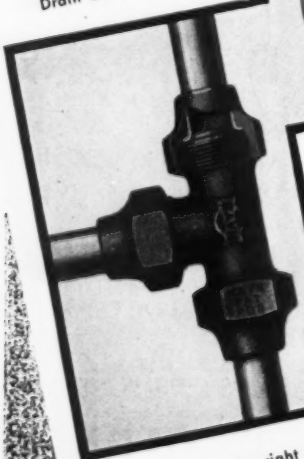
Sixty-two years of conscientiously serving the plumbing industry has given Hays a reputation for reliability and fair dealing. Your wholesaler will speak well of Hays products and will be able to meet your every requirement with them.

Send for "Street to Bath" by Hays and become better acquainted with this complete line of first quality equipment priced to save you money.

HAYS MANUFACTURING CO., ERIE, PA.

Fig. 185 T—Signet Compression Stop and Drain with Dome Bonnet. Inlet and Outlet ends for Copper Pipe.

Fig. 188 D—Mova Double Laundry Tray Faucet. Quick Compression with Drain Outlet.



At the left is a Hays Copper Plumbing Fitting featuring the Hays Double Seal Connection. There are more than 400 sizes and styles of these Hays Copper Fittings to choose from.

Fig. 645—Haysco Lavatory Fixture with Pop-Up Drain.

Fig. 179 F at the right is an Erico Double Sink Faucet. Flanged Female I. P. All Brass Lever Handles and Tray.

HAYS

MARKETS

BUSINESS REPORTS FROM LARGE JOBBING CENTERS

LITTLE, if anything, in a news way developed in the plumbing and heating market during the past fortnight, and according to the majority of reports received from manufacturers and wholesalers, business in the leading jobbing centers of the country continued at about the same moderate pace that prevailed during the preceding two-week period. The movement of roughing-in goods was very light, and it would seem from most reports that other plumbing materials, including finishing products, failed to move at anywhere near the pace that has come to be expected at this season. Demand for heating goods is reported from several sources to have subsided in comparison with the movement that prevailed several weeks back, but it is stated that a fairly good call continues for repair parts.

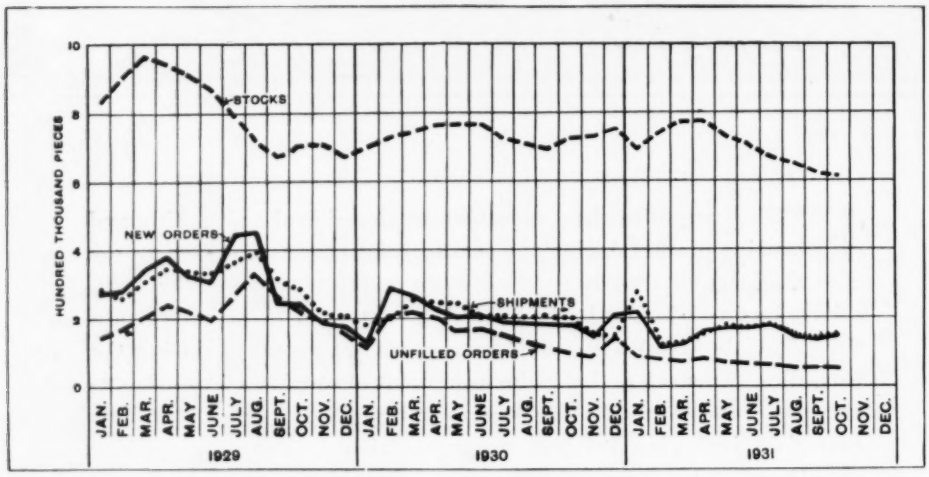
Wholesalers' stocks, at a low point all year, are being pared even further, where possible, in anticipation of the annual inventory period. Consequently, manufacturers' salesmen are able to report only infrequent orders, and these are usually to take care of immediate needs of their customers. Reports so far received do not indicate that jobbers are committing themselves to any extent for after-inventory shipments.

With only one important territory in the 37 states east of the Rockies showing a gain in new construction contracts, retrenchment in building and construction continued unabated during November, according to F. W. Dodge Corporation figures. The advancing district was the Central Northwest territory, comprised of Minnesota, the Dakotas, the Northern peninsula of Michigan, and Northwest Wisconsin. Its total of $6,900,000, comparing with $4,851,000 in November 1930, showed gains in all three major construction groups.

Total construction contracts awarded in November in the entire 37 states amounted to $151,195,900. This was divided among the three major classes with $45,290,400 in residential building; $58,495,800 in non-residential building and $47,409,700 in public works and utilities. The loss from October, when large contracts for Radio City swelled the total, amounted to 38 per cent, as contrasted with a customary seasonal decline of less than 15 per cent.

November wholesale prices of six standard plumbing fixtures for a six-room house, ascertained by the Bureau of the Census from reports of twelve representative manufacturers and wholesalers, averaged $94.15 as compared with $96.12 in October, $96.68 in November, 1930, and $100.58 in November, 1929.

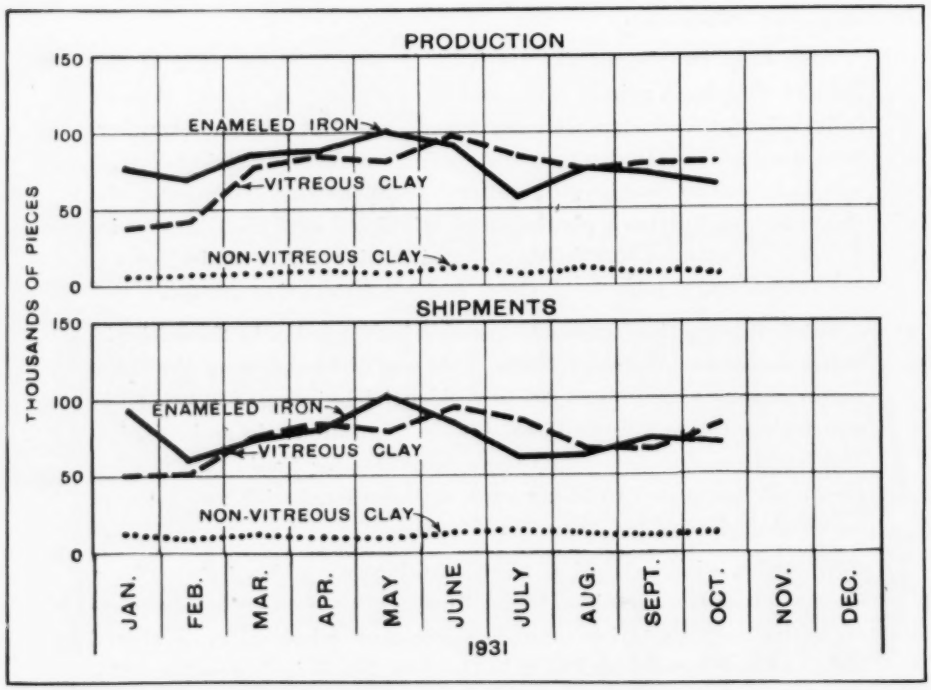
Stocks and Shipments of Enameled Sanitary Ware



The above chart shows monthly statistics for the period from January 1, 1929, to October 31, 1931, inclusive, on shipments and stocks of enameled sanitary ware. The chart is based on reports submitted to the Bureau of the Census by twenty-one manufacturers who comprise practically the entire industry

Shipments and Production of Bathroom Accessories

(Recessed and Attachable)



Monthly statistics on the production and shipments of recessed and attachable bathroom accessories (built-in and projecting types), are shown in the above chart. This chart is based on data reported to the Bureau of the Census by sixteen identical establishments

The Metal Market

	Dec. 21	Avg. Nov., 1931	Avg. Sept., 1931	Dec., 1930
PIG IRON—				
No. 2 foundry, Chicago	$17.50	$17.00	$17.50	$17.50
PLATES AND SHEETS—				
Steel boiler plates, Pittsburgh, per lb.	1.50c	1.60c	1.60c	1.60c
Blue annealed sheets, No. 10, Pittsburgh, per lb.	1.85c	1.85c	1.85c	1.90c
*Hot rolled annealed sheets, No. 24, Pittsburgh, per lb.	2.40c	2.40c	2.40c	2.35c
Galvanized sheets, No. 24, Pittsburgh, per lb.	2.90c	2.90c	2.90c	2.90c
TIN—				
Straits tin (spot) New York	21.50c			
LEAD—				
E. St. Louis	3.15c			

The Old Metal Market

Dealers' Buying Prices

	Per lb.		Per lb.
Aluminum clippings	11½c	Copper, light	3¾c
Block tin pipe	15½c	Heavy crucible copper	4½c
Brass, light	2¼c	Zinc, old	1½c
Brass, heavy yellow	2¾c	Lead, heavy	2¾c
No. 1 comp. red brass	3¾c	Solder joints (close cut)	3½c
Heavy copper and wire	4¼c		

NOTE: Prices are those quoted on Monday of this week.
*Comparisons are with old classification No. 24 black sheets.

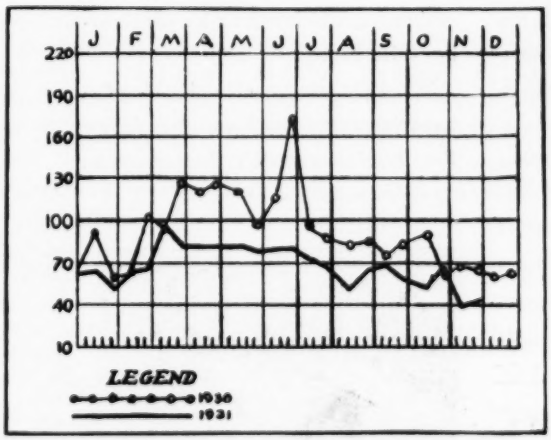
Standard of Vitreous China Plumbing Fixtures Is Reaffirmed

A recent report from the Department of Commerce, Bureau of Standards, Washington, D. C., summarizes the results of a survey undertaken in co-operation with the manufacturers of vitreous china plumbing fixtures. The purpose of the survey was to determine the adherence, effectiveness and benefits, if any, derived from the establishment of the Commercial Standard entitled "Staple Vitreous China Plumbing Fixtures, CS20-30."

In accordance with the recommendation of the Standing Committee, this standard is reaffirmed without change for another year beginning March 3, 1932, according to G. W. Wray, division of trade standards, Department of Commerce.

Building Contracts Awarded

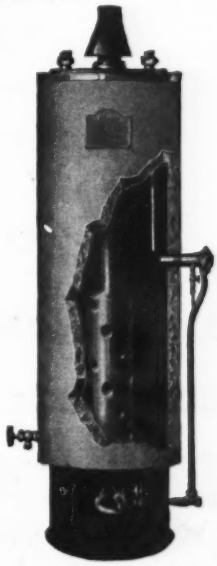
(Daily Average)



WELDCO WATER HEATER
TRADE MARK REG US PAT OFF

Greatest Efficiency Yet Reached!

ENTIRELY new and different design in an efficient, permanent Automatic Hot Water System. Lifetime copper heating element is submerged in vitreous enameled tank. Tests reveal an efficiency never before attained—dependable, continuous supply of clean, hot water assured for the life of the building.



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Write today for illustrated literature and complete details which point the way to profits for you.

The Youngstown Welding & Engineering Co.
3600 Oakwood Ave. YOUNGSTOWN, OHIO

ARMSTRONG BROS.

PIPE VISE SADDLE

New

PAT. APP. FOR

Instantly attaches to any tree or square or round post. Holds vise rigidly. Goes right to the job, and saves many trips to bench or truck. One saddle serves for all ordinary sizes of vises. Built of Certified Malleable Iron with hardened steel nut and drop forged handle. Equipped with flat linked chains that are *proof-tested* beyond any requirement.

Takes most Standard Hinged, Heavy Duty and Open Side Pipe Vises.

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Waldorf-Astoria Hotel, New York, N. Y.
Solid Nickel Silver★
Plumbing Fixtures by:
Standard Sanitary Mfg. Co., Pittsburgh, Pa.
and
Sloan Valve Co., Chicago, Ill.
Architects:
Schultze & Weaver, New York, N. Y.
General Contractor:
Thompson-Starrett Co., New York, N. Y.
Plumbing Contractor:
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THE WORLD'S MOST FAMOUS HOTEL HAS SOLID NICKEL SILVER★ PLUMBING FIXTURES

Solid Nickel Silver★ trap and wash basin installation for new Waldorf-Astoria Hotel. Mfd. by Standard Sanitary Mfg. Co., Pittsburgh, Pa.

★SILVARD is the name used by Standard Sanitary Mfg. Co. to identify its Nickel Silver used in plumbing fixtures. This is a solid white metal and contains a high percentage of Nickel.

● Naturally, you'd expect New York's new Waldorf-Astoria...proclaimed the most famous hotel in the world...to have Solid Nickel Silver★ plumbing fixtures.

Throughout this magnificent hotel guests will admire the rich, gleaming beauty of this modern high Nickel alloy. Years of hard use and repeated cleaning will not mar its lifetime attractiveness. It has the necessary resistance to soaps, cleaners, disinfectants, acids and corrosive fumes. It's easy to clean ...easy to care for. And it's as tough as bronze, which means longer wearing valve seats.

When choosing quality plumbing fixtures you can do no better than follow the Waldorf-Astoria's fine example. Specify Solid Nickel Silver★.

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TRADE

News of Plumbing and Heating Contractors

H. & P. C. Select Dates for National Convention

The Heating and Piping Contractors National Association has selected May 16, 17 and 18, 1932, as the dates for its 43rd annual convention, which is to be held at Detroit, Mich. Headquarters will be at the Book-Cadillac hotel.

The convention committee is working on the program now, and requests suggestions concerning subjects for discussion, speakers, or entertainment. The convention will be devoted to the immediate problems of the members—how to sell heating installations, how to manage the business, and the many other questions essential to the future welfare of the membership.

◆

Kansas Master Plumbers Set Dates for Annual Convention

The board of directors of the Kansas Master Plumbers Association met on December 15 and decided that the association will hold its annual convention at McPherson, Kans., March 14 and 15, 1932, according to word just received from Carl McGregor of Winfield, state secretary. Convention headquarters will be at the Hawley hotel. J. E. Lansdowne of Wichita is state president.

◆

South Dakota Convention Dates Are January 6 and 7

The South Dakota Retail Plumbers' Association will hold its annual convention at Mitchell, S. Dak., on January 6 and 7, 1932. Headquarters will be at the Widman hotel. The convention will be held in conjunction with the South Dakota Contractors' Association and the South Dakota Architects' and Engineers' convention. Separate meetings will be held by each association, and a joint meeting and banquet will be held on the evening of January 7.

◆

Milwaukee Masters Start Convention Preparations

Officers and directors of the Milwaukee Master Plumbers' Association are working on plans for the Wisconsin state convention, to be held at the Pfister hotel, Milwaukee, January 12, 13 and 14, 1932. The group includes W. W. Dusold, H. C. Weber, A. F. Boettcher, Peter Vogt, H. A. Wegner, David Stern, Charles Pelunek, Joseph Wittig, Jacob Schuh, Joseph Brah, Walter Tesch, L. R. Schmaus, A. A. Hoffmann, Charles Priegel, O. A. Waskow and George C. Block.

On January 11, the day before the Wisconsin state convention opens, the Pfister hotel will be the scene of the annual Wisconsin state-wide Apprenticeship Conference.

◆

Illinois Masters Will Stress Merchanding at State Convention

The Illinois Master Plumbers' Association has selected January 19, 20 and 21, 1932, as the dates for its annual convention, the meeting to be held in Springfield, Ill., with the Abraham Lincoln hotel as convention headquarters.

While the program has not yet been fully completed, State Secretary C. A. Bolton indicated in a recent letter that arrangements are being made to secure a number of prominent speakers to talk on business subjects. Mr. Bolton says in part in his letter:

"One of the principal subjects that will be presented and discussed at this year's convention will pertain to the merchandising end of our business, and in this respect we expect to have a plan developed in regard to a co-operative merchandising policy with the utilities."

◆

Pennsylvania Local Association Secures New Members at "Booster" Meeting

A "booster" dinner meeting was held by the Wyoming Valley (Pa.) Association of Master Plumbers at the Hotel Redington, Wilkes-Barre, Pa., on the evening of November 18. Seventy master plumbers were in attendance, including both members and non-members of the association. That the gathering was a success is indicated by the fact that ten new members were secured for the Wyoming Valley association.

James O'Rourke, president of the Wyoming Valley association, presided, and Walter C. Williams of Wilkes-Barre, president of the Pennsylvania State Association of Master Plumbers, acted as toastmaster. Among those who addressed the meeting on the value of association affiliation were: Maney J. Feeney, president of the Philadelphia association and a director of the N. A. M. P.; E. J. Meglathery, plumbing inspector of Bethlehem, Pa.; C. F. Troutwine, of York, Pa.; and Councilman Ware of the City of Bethlehem. Carl J. Forve, of Wilkes-Barre, secretary-treasurer of the Pennsylvania state association, was also present at the meeting in an unofficial capacity.

Plumbing Short Course to Be Given at University of Wisconsin

A special Six-Day Short Course for plumbing inspectors, instructors, master and foreman plumbers will be given at the College of Engineering, University of Wisconsin, Madison, February 1-6, 1932.

A successful course was given last year and the unanimous opinion of those who attended was that a somewhat similar course should be offered in 1932. As before, the course is being arranged in co-operation with the Wisconsin Master Plumbers' Association and subsidiary organizations.

The course will be divided into three parts: (a) For the men who attended last year; (b) For new men, and (c) Certain lectures and demonstrations for both groups.

In general, the work consists of lectures, problems, demonstrations and work in the laboratory. The course is an intensive one comprising four lectures or demonstrations each day and a laboratory period and also an evening lecture on a topic of interest to all.

Professor F. M. Dawson, College of Engineering, University of Wisconsin, is in charge of the course.

◆

Milwaukee Masters' Association Elects New Officers

Henry C. Weber has been elected president of the Milwaukee Master Plumbers' Association for the year 1932, succeeding W. W. Dusold. The election took place at the annual meeting of the organization, held on December 15, in the club rooms at the Builders' Exchange, Milwaukee, Wis.

Other officers chosen include Albert A. Hoffmann, vice president; Arthur F. Boettcher, secretary; and Peter Vogt, treasurer.

The board of directors for the organization includes the officers and Walter Dusold, Charles Pelunek, Joseph Wittig, David Stern, Jacob Schuh, Lewis R. Friend, Joseph Brah, Louis R. Schmaus, Otto A. Waskow, Charles Priegel and Walter Tesch. Peter King is assistant secretary of the organization.

Manhattan Association Celebrates Golden Anniversary

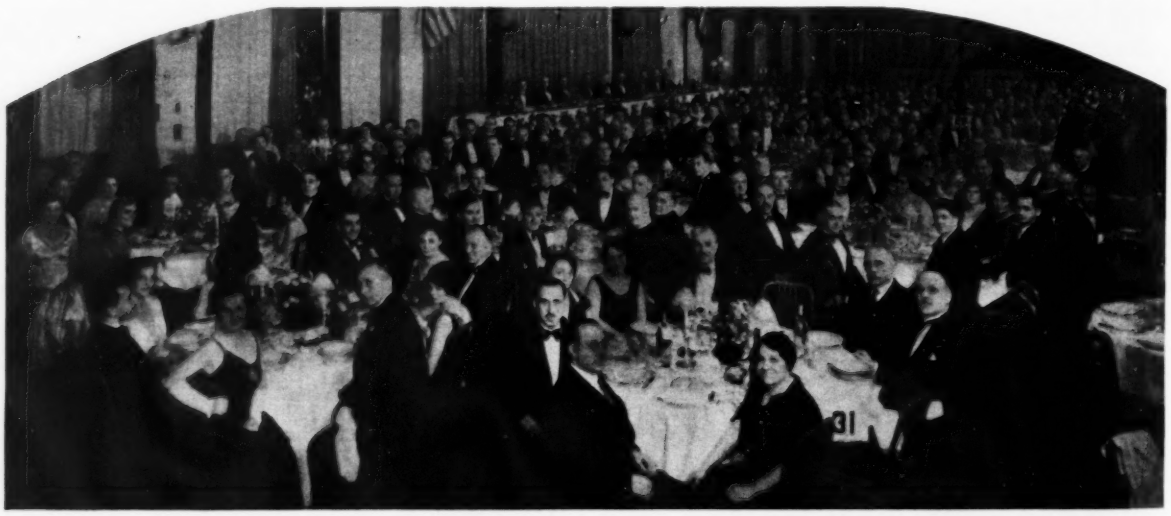
The Manhattan Association of Master Plumbers celebrated its golden anniversary with a dinner-dance and entertainment on November 21 in the ballroom of the Hotel Astor, New York City. The association is the oldest employers' organization in the building trades of New York, and evidence that the members felt the occasion should be fittingly marked was found in the large number of master plumbers, wholesalers and manufacturers who, in the words of President John D. Cooley, "turned out to mark a triumphant milestone in the history of our craft."

Twenty-five years ago the silver anniversary of the association was celebrated by a similar gathering, although this year's party was on an even more elaborate scale. The Manhattan association was organized in 1881 in the old Ashland House of New York.

Henry Hogan Berg and Emanuel Kalisch were the chairmen of the entertainment committees in charge of arrangements for the golden anniversary celebration, and, with the aid of their assistants, a splendid program of entertainment was provided. Dinner was served at about 7:30 o'clock, which was followed by addresses on the part of prominent members of the industry, a vaudeville show, and dancing. Each lady present was presented with a compact. Jere L. Murphy, chairman of the National Standardization Committee and for many years an active association worker, served as toastmaster for the evening.

Among those at the head table were: President John D. Cooley, John J. Dixon, Samuel Fassler, William J. Flynn, Frank Habeck, Matthew J. Kennedy, Fergus M. McLoughlin, J. L. Murphy, J. Preston Perham, John F. Rogers, Harry Voletsky and William Wolff.

In addressing the gathering, Mr. Kennedy, who is chairman of the convention and exhibit committee for the forthcoming annual convention of the National Association of Master Plumbers, described



Group picture taken at the golden anniversary banquet and dance of the Association of Master Plumbers of Manhattan, which was held recently at the Hotel Astor, New York City

plans that are being made for the convention and exhibit and urged all present to lend their complete support to the project. Mr. Voletsky, who is secretary of the New York state association, supported Mr. Kennedy's request for assistance in making the convention a successful one.

William Wolff, of Brooklyn, president of the New York state association, said he was pleased with the large number of women present, and asked them to lend their support to the National convention and also to the New York state convention, which is to be held in New York City on April 5 and 6. He also requested that the manufacturers, wholesalers, utility companies and master plumbers support these two conventions.

In passing, Mr. Wolff pointed out that despite the economic situation, the Brooklyn local has not lost a single member from its roster.

J. Preston Perham, of West Roxbury, Mass., secretary of the National Association of Master Plumbers, was the official representative of the National body at the gathering. He spoke, briefly, requesting complete co-operation in arranging for the National convention. He was followed by Mrs. Perham, who is president of the National Auxiliary. She directed a special request to the women to help make the convention a success, and pledged her assistance in helping to organize an Auxiliary in New York City.

Others who addressed the gathering were: B. Joseph O'Donnell, of Syracuse; Samuel Fassler, superintendent of building in Manhattan; and Fergus McLoughlin.

Respects were paid to the following association members: Morris Jarcho, T. P. McLoughlin, William Wallis, Joseph F. Heck and John J. Fallihee.

◆

Home Building Urged by Member of President's Relief Committee

Resumption of home building by the nation will be one of the most powerful forces in speeding business recovery, according to W. C. McTarnahan, president of the Petroleum Heat and Power Company, who is chairman of the oil burner group of President Hoover's Organization on Unemployment Relief. "The home building plan of the President, recently discussed at the conference in Washington, and which will be presented to Congress, forms one of the most constructive proposals yet made to quicken business recovery," said Mr. McTarnahan. "It is proposed to set up a credit system with an operating capital of two billion dollars to re-discount mortgages of homes held by banks. By providing easier money and more attractive amortization terms, early stimulation of home building may be expected under this plan."

"In the past, industrial expansion in this country has been closely associated with periods of active home building," continued Mr. McTarnahan. "From this nucleus of two billion dollars, a trade volume of five or six billions will be built up, which should be very instrumental in breaking the backbone of the depression. The home owners will contribute up to fifty per cent in the financing, or another two billion dollars, and in addition a demand for home furnishings, appliances, etc., will stimulate business in those industries.

"Looking back at previous business slumps, we find that very frequently recovery has been brought about by specific industries taking the lead. Foreign trade, railroads, automobiles and building construction in the past have ushered in new eras of prosperity," continued Mr. McTarnahan. "Viewing the present situation, the most likely leader now upon the horizon is the building industry. The instinct for home ownership is strong in American hearts, and if the Gordian knot which now keeps thousands of families from possessing their own homes is cut by President Hoover's plan of home building, this instinct will soon express itself in concrete form in thousands of new homes throughout the country."

◆

Maryland State Masters Hold Annual Oyster Roast

The Association of Master Plumbers of the State of Maryland, Inc., held its annual Oyster Roast at Brendel's park, Ellicott City, Md., on November 19. Approximately three hundred master plumbers and their families, friends and guests enjoyed themselves, partaking of Maryland's famous seafood in all styles.

Gus Wirth and Joseph L. Gessler were in charge of arrangements, and those who assisted were Frances C. Dorsey, Samuel Houck, August V. Eidman and Thomas Thaler.

◆

Send Christmas Greetings to Master Plumbers

The Cincinnati Master Plumbers' Association, through Mr. and Mrs. Edward Frank, general chairmen for the forthcoming annual convention of the Ohio State Association of Master Plumbers, sends the following message and Christmas Greetings to all master plumbers:

"One of the most expressive words in our language is 'Gratitude,' much stronger than the simple word of thanks, often lightly given and casually received. Gratitude is more than an acknowledgment; it is an appreciation of the full value of that which we have received.

"It is a fine thing to pause once a year and consider the things which make life so well worth living; to realize that our happiness comes not alone from our own efforts—to appreciate how largely it depends on the kind, unselfish acts of others.

"Cincinnati cordially invites all master plumbers and their families to attend the convention to be held in their city at the Netherland Plaza hotel, February 2, 3 and 4, 1932.

"The Cincinnati Woman's Auxiliary and the master plumbers are working hard to make your stay in Cincinnati a most pleasant one.

"Wishing you all a Merry Christmas and a Prosperous, Happy New Year. Also hoping to see you next February."

◆

Death of John A. O'Brien

John A. O'Brien, for 33 years a master plumber in Watertown, N. Y., died in Mercy hospital, in that city on December 7. Death was caused by diabetes. Mr. O'Brien had been a patient in Mercy hospital since November 25.

Mr. O'Brien was born in Watertown in 1871, and learned the plumbing trade as a young man. At one time he worked for Hyde Bros., and later at the old

Hiram Arthur plumbing shop. Then he went into business for himself, which he continued until four years ago when ill health forced his retirement.

Surviving are his widow, one daughter, Mrs. Raymon S. Waterman, a brother, Rev. Edward F. O'Brien of Harrisville, N. Y., and Frank C. O'Brien of Watertown.

Death of William Graham

William Graham, retired master plumber of Chicago, Ill., died on December 17 in St. Francis hospital, Evanston, after a long illness. Mr. Graham, a native of Ireland, had lived in Chicago since he was 14 years old. He was in his 77th year at the time of his death. He installed much of the plumbing in the Chicago World's Fair buildings in 1893. His place of business was at 1153 North Clark street for forty years, where the company operates now under the name of William Graham & Co. Mr. Graham was a member of the Plumbing Contractors' Association of Chicago. He made his home with Charles A. Roland, 21 Scott street, with whom he had been associated in business since 1897.

Death of Leonard J. Droese

Leonard J. Droese, master plumber at Milwaukee, Wis., for 38 years, died at the home of his daughter in that city on December 9 after a short illness. Mr. Droese was born in Milwaukee February 21, 1870. He was president of the L. J. Droese Co., until he retired several years ago.

Mr. Droese was active in the Milwaukee and Wisconsin state master plumbers' organizations. Funeral services were held at Milwaukee Saturday, December 12, with burial in Valhalla cemetery. Survivors are four daughters, Mrs. George Vogel, Mrs. Harry Pawell, Mrs. H. Doege and Mrs. Walter Heine.

Death of John P. Lowry

John P. Lowry, master plumber of Bloomington, Ill., died at his home in that city on November 28. He had been one of the prominent plumbing contractors of Bloomington for a great many years, and had been an active association worker since the time he first started in business. Mr. Lowry had been confined to his home for only a few days with a cold which developed into pneumonia.

A Half Century of Growth

(Continued from Page 23)

"Well," was Mr. Weider's pointed reply, "if we didn't read DOMESTIC ENGINEERING regularly, we couldn't keep up with the progress of the industry. Plumbing is not different from any other business. You can't stand still in it. You must either go ahead or fall behind. The only way you can keep progressing intelligently is to read the trade papers regularly. Their job is to inform the plumber of changing trends and conditions. DOMESTIC ENGINEERING does this job excellently. We wouldn't be without it."

Mr. Weider has been the directing head of Barr & Creelman since 1916, having started with the organization as a helper more than a quarter of a century ago.

Top row, left to right: C. D. Eisemann, J. Wynkoop, W. G. Meyer, W. H. Frey, E. H. Rinear, Jr., A. F. Yahn, J. T. Palfreyman and A. G. Anderson, all of Philadelphia. Bottom row: Charles A. Rapp, Henry Cramer and Robert Pflug-Felder, secretary, all of Philadelphia. Photos taken at the annual convention of the Pennsylvania State Association of Master Plumbers, held recently at Allentown

He recalled many of the changes which have occurred in the industry since he joined Barr & Creelman and pointed to many others which old records of the firm reveal.

He drew out an old bill of 1894, the same year in which the firm first became a subscriber to DOMESTIC ENGINEERING. The bill conveyed the somewhat astonishing information that Barr & Creelman had received only $1.94 for the services of a plumber and helper for three and a half hours. This same service today would cost at least seven dollars, possibly more.

"I think it is safe to say," Mr. Weider said, "that the most significant change in the industry in the last twenty-five or thirty years has been that affecting labor. I feel sure that any master plumber who has been in business during this period will agree with me that as wages have gone up the quality of the mechanic's work has gone down. When I was a mechanic, Mr. Creelman used to give me a set of plans and tell me to go out and do the job. That's all there was to it. I took a helper and went out, intent on doing the best job I could in as short a time as was possible. Nowadays, however, when we send a man out we have to send another after him to see that he's doing his job right. In my day, the workers had a sense of loyalty to the house they were connected with. That seems to be lacking today and as a result we are not getting the quality of work."

It has been under Mr. Weider's leadership that Barr & Creelman has made its greatest strides. Five years ago, he startled the trade in the city by opening on the ground floor of the Barr & Creelman building the largest display room in the city. It now requires the services of half a dozen clerks to handle the business.

He was among the first plumbing executives in the city to sense the profit possibilities in oil burners as an adjunct to plumbing. Wisely he established a separate oil burner department with its own offices and own staff on the second floor of the Barr & Creelman building. A sales manager, two salesmen and four service men comprise the staff.

"It is the only sensible way to handle oil burners," Mr. Weider said. "They can not be handled satisfac-

torily along with the rest of the plumbing business. Oil burner success depends a good deal on keeping accurate check on costs. This can not be done if they are handled with other business."

Keeping check on costs is one of Mr. Weider's hobbies, and is another reason for Barr & Creelman success. He has installed an accounting system which gives him a clear picture at all times just where the firm stands financially.

"Too many plumbers," he explained, "ignore the accounting end of their business with the result that they suddenly find themselves bankrupt and wonder why."

But it is in the advertising methods that the real key to Barr & Creelman's success is found. Almost since the day of its founding, the firm has been a consistent and intelligent advertiser. Today it spends more money than any other plumbing house in the city to promote its business. Every form of effective advertising is used. Atop the building, which itself is an excellent advertisement, is a large electric sign which can be seen for many blocks around. On the radio every Sunday night for half an hour, the firm offers a variety program of music and songs interspersed with selling messages on the merchandise and services which Barr & Creelman has to offer. And regularly in the three daily newspapers, the firm pounds across its message of plumbing service and merchandise to the public. The annual advertising appropriation runs from $10,000 to $15,000, ample proof that Barr & Creelman believes in the effectiveness of this modern form of sales promotion.

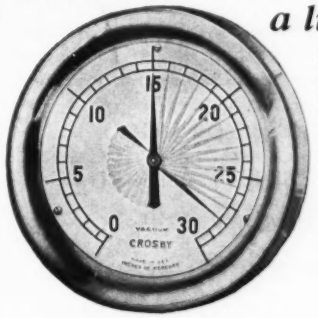
"We get plenty of big contract jobs but I wouldn't say that we specialize in them," Mr. Weider declared. "We have had the plumbing contract for most of the important buildings in Rochester as far back as I can remember. We are working on big jobs now in many parts of the state. We have received most of them on the basis of past performance and satisfactory bids.

"Ten or fifteen years ago we were always glad to get one of these big jobs because we could show a good profit for the time and effort invested. Unfortunately, however, competition has become so keen that we do not make any great effort to get them any more. Our accounting system which gives us an accurate check on all our costs does not permit us to bid as low as some others. From our own record of costs, we feel reasonably certain that many successful bidders on big jobs actually are paying money for the privilege of doing them, but they apparently do not know this. And herein, I believe, lies a serious menace to the industry. Reckless bidding for contract work is demoralizing the industry and bringing profit to none but the builders.

"Rather than engage in this folly we have turned to the merchandising end of our business and have succeeded quite well. Our showroom shows an excellent profit and the oil burner department will do the same as soon as we have time to develop it. It seems to me that the plumbing trend has turned definitely from job work to merchandising. Certainly no longer will job work bring sufficient profit to maintain a business."

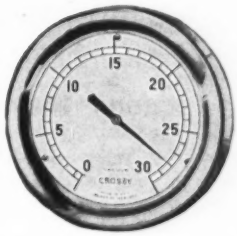
Of the original founders of the firm only Mr. Creelman remains today. Mr. Barr died in 1910 and Mr. Creelman, while holding the office of president, has not been active in the business for some years.

When the Vacuum slips a little each week



You can be practically sure that joints leak, but—it's a very easy job to stop all the leakage by painting over every threaded joint and every gasketed joint with

SMOOTH-ON No. 3



Joints painted over with Smooth-On No. 3 will hold even a 28-in. vacuum month after month on any condenser or heating system line.

YOU can't expect plant capacity or good heating efficiency until proper gauge reading is restored.

Leaks in the line joints give no visible evidence.

Don't waste time trying to find them, but coat the outside of every threaded and flanged joint with

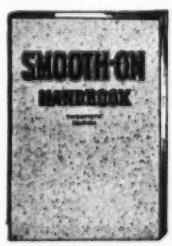
SMOOTH-ON No. 3.

By so doing, you will "get" every line leak, and at the same time you will protect the good joints from future weakness. Application of the Smooth-On No. 3 is very simple—merely painting over the surface with a brush—and requires neither special effort nor much time.

The vacuum draws the Smooth-On into the open spot and forms a seal which is impervious to vibrations, because once Smooth-On is set, it expands and contracts at the same rate as the rest of the line, and it cannot shrivel or shrink.

On starting up condensers or vacuum heating systems after a period of idleness, this simple treatment will put the lines into perfect condition.

Get Smooth-On No. 3 in a 1 or 5-lb. can from your dealer or from us.



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***Do it with* SMOOTH-ON**

The Milwaukee Master Plumbers' Association is recognized as being one of the most progressive organizations of master plumbers in the country. In this article, Peter J. King, assistant secretary, tells how his association is able to keep its members continually interested by offering them a wide range of useful services

The Association's Job

I BELIEVE we are all equally perturbed as to what to do to maintain a constant, keen interest among the membership in the association purpose and program.

During my seven years of association work I have observed that in order to obtain a constant interest on the part of the membership it is essential to have a variety of association activities, and that all must be constantly promoted with vigor. Furthermore, it is necessary to be on the lookout for new developments and to adopt, organize and promote new activities, and to join with related groups in the promotion of helpful activities whose success may have a benefit upon our industry and the community welfare.

We are too prone to lose interest in and to tire of the things we possess, however precious their worth, and to crave for new acquisitions whose merit may be unknown. Obviously the first essential in any collective co-operative undertaking is an intelligent understanding of the value of co-operative effort on the part of those affiliated, and a willingness to contribute time, thought and money toward the promotion of the common good.

I shall admit at the outset that I have no panacea, no cut-and-dried formula, to offer, that you can take back home with you and apply, and presto, henceforth have a 75 per cent attendance at your meetings and no further difficulty with outstanding dues, etc. I believe one of the most disappointing phases of association work is the apparent lack of interest displayed by the membership in association activities as reflected in the poor attendance record at meetings. The Milwaukee association has probably a larger percentage of the desirable men engaged in the business affiliated with it than most associations in cities of similar size (approximately 80 per cent being affiliated), and has many related activities to hold their interest. Nevertheless a considerable percentage of our members, although they fall into the classification of the younger and aggressively active in business, are apparently inappreciative of the standards that have been developed through association effort over a long period of years, and appear unconcerned about maintaining and advancing these standards. There is still too large a sprinkling of men in this business who are unresponsive to any effort or activity that may have as its purpose a desire to educate, to elevate and to refine the prevailing standards.

Insurance Plan Aids Milwaukee Association

The most helpful related activity of the Milwaukee association comes from the Mutual Insurance company covering workmen's compensation, public liability and automobile coverage. Through the various activities that surround the insurance function frequent contact is maintained with the member policyholder, thus affording an outside means of maintaining an acquaintance with the stay at home association member. Because of the monetary saving he acquires a more friendly interest in the association. The insurance company activity thus becomes a valuable support to the association.

One of the most far reaching benefits that have accrued to the association because of the insurance company activity has come from the annual contact of the insurance company auditor with the membership when making the annual audit of the policyholder. When the insurance company was first organized in 1911, only a small percentage of the policyholders had satisfactory

bookkeeping systems. Gradually, over the intervening period of years, the auditor has succeeded in persuading the members to adopt a satisfactory double entry system of bookeeping, until at the present time nearly all of our members have a satisfactory system of accounting. It should be pointed out that this task was lightened because of the income tax law, the attention given to better accounting by the trade business papers, and the efforts of the Plumbing and Heating Industries Bureau.

Instruction in Bookkeeping Is Important Association Function

For a period of years the Milwaukee association has conducted association-sponsored bookkeeping classes. During the last two years these classes have been held at the Vocational school, the association selecting the instructor, subject to the school's approval. This arrangement made possible the selection of a teacher familiar with our particular requirements. The course taught is the Plumbing and Heating Industries Bureau's system. The teacher is a certified public accountant, and is employed by the insurance company as auditor. He also serves many of our members by coming in once a month to write up their books. In this way he has intimate contact with the members and their bookkeepers, and is afforded an opportunity to guide and advise and to persuade their attendance at the bookkeeping classes. It is our purpose to continue these bookkeeping classes as a permanent activity of the association.

Some of the Services and Activities of the Milwaukee Association

Mutual Insurance plan
Instruction in bookkeeping
Bath tub protective fund
Central credit bureau
Association collection service
Co-operation with state university
Employment of business counsellor
Vocational training work
Varied social activities
Participation in "Home Show"
Co-operation with other building trade groups

You will recall that a few years ago there was a great deal of concern in association circles regarding the question of finding a practical remedy to care for the losses sustained because of damage done to bath tubs after they are installed.

Bath Tub Protective Fund Helps Members

Because of the favorable experience with the insurance company undertaking, the thought suggested itself that the bath tub problem would lend itself to a similar mutual insurance plan. A group of the membership came together and organized a Bath Tub Protective Fund for the purpose of mutually caring for the hazard involved. This club has been functioning very satisfactorily for a period of six years. The plan of operation is as follows: An entrance fee of $5.00 is charged and an assessment of $1.00 is made for each bath tub installed. The club adjusters assume charge of all complaints and the club bears every expense involved in making the adjustment. In cases where it becomes necessary to remove the tub, the club member is reimbursed for his plumber's time out of the funds of the club. The unit cost experience of the club for the period of its existence has been approximately 45 cents per tub. Membership in the club also provides for free legal consultation service by an attorney specializing in lien and contract law. It should be pointed out, however, that this low cost has been made possible largely because of the fact that officers and managers of the club have served the club gratis.

Last year we conducted a course of four lectures in salesmanship. This course was conducted under the auspices of the Vocational school and was open to all in the plumbing and heating industry. It was well attended and we expect to repeat the course during the coming winter.

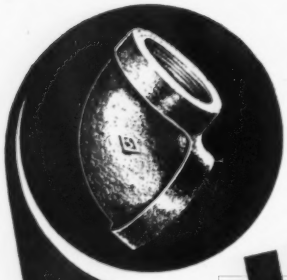
State University Is Used to Advantage

A year ago we made overtures to the Engineering Department of the University of Wisconsin and they responded by organizing a 10 day short course in plumbing. (A full description of this course appeared in DOMESTIC ENGINEERING several months ago.) We have the assurance of Prof. Dawson that the university will inaugurate the course as a permanent general service as long as we continue to support it. However, in the future, the course will be for a period of one week, it having been found that 10 days is too long a period for most men to absent themselves from their business.

The University of Wisconsin, acting through the School of Commerce and the University Extension Division, holds annually a one-day Business Conference, to which it invites the business men from the state. This year we made a determined effort to have a delegation from our association attend, and seventeen members responded. They came back greatly impressed with the discussions which took place at the conference, the effect of attending being that seventeen of our members were brought together in an educational effort, and having fraternized for a day, they came back a little better acquainted and a little better equipped to carry on their co-operative association duties.

Various Trade Groups in Building Industry Co-operate

Recently there was organized in Milwaukee a Builders' Congress patterned after similar organizations existing in other cities. The object of the congress is to bring all of the various construction branches together in one central organization for the purpose of closer co-operation in matters concerning the welfare of the construction industry. This organization thus far has met with very enthusiastic response. It meets regularly once a week during the session of the legislature to consider all bills before the legislature that are likely to affect any branch of the building industry, and take a united



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stand upon all mutual questions in connection with the congress.

It was decided to organize the secretaries of the various Building Trade Associations into a Secretaries' Forum. This has been done; the secretaries meet at luncheon on the same day as the congress, and in addition to becoming better acquainted, the group serves as an advisory council to the congress. I might say, in connection with the building trade association secretaries, that the thought conceiving this association was suggested by these secretaries, because of their membership in the Milwaukee Secretaries' Forum.

Several years ago the Milwaukee Trade Association Secretaries organized a general Secretaries' Organization, embracing about thirty trade association secretaries. This organization has proven a very valuable medium to promote contact and acquaintance between secretaries in all lines of trade activities.

Social Activities Play Prominent Part

About a year ago there was formed in Milwaukee a social club comprised of the managing personnel of the manufacturing, wholesale and retail branches of the plumbing and heating industry. The organization is known as the Plumbing and Heating Club. It is patterned after similar clubs in other cities. Its purpose is to bring about closer acquaintance through social functions—bowling, golf meets, picnics, etc. It may be stated that the club last year sponsored a joint picnic between the plumbing and heating branches embracing the wholesale and retail divisions. This experience proved so successful from both a social and economic standpoint, that it is generally agreed that one joint picnic shall become a permanent policy for future picnics.

Ten years ago Milwaukee organized a central organization known as the "Milwaukee Home Show," the underlying purpose of which is to stimulate interest in home building and home modernizing. The organization is financed jointly through the general co-operation of all branches of the construction industry. The movement has acquired a constantly growing popularity. This year's show was attended by 80,000 people. There is an admission charge to help in defraying expenses. The Home, Show committee annually builds a model home which is offered as an attendance prize. The home is made possible through general donations; for instance, the plumbing installations were donated jointly by the plumbing wholesalers and the Milwaukee Master Plumbers' Association.

Credit and Collections

A year ago the various branches of the industry organized a central credit bureau patterned after similar bureaus existing in Detroit, Grand Rapids and Pittsburgh. Although a new undertaking, and having come into existence at a time of financial stress when it is exceedingly difficult to raise adequate finances to make possible effective functioning, the bureau has, however, proved its practicability and its effectiveness beyond all doubt, and if given adequate financial support should prove the greatest single blessing that has ever been visited upon the construction industry.

After many years of inquiry and hesitancy, the Milwaukee association, on January 1 of this year, inaugurated an Association Collection Service for its members,

to supplement the group credit service obtained for its members through association membership in the Construction Industries Credit Bureau.

There has developed in Wisconsin a keen interest in the Vocational school movement. Because of this interest there has come into being within the vocational school system the organization of itinerant circuits which embrace groups of the smaller cities within a circuit. The personnel of the vocational school system in this state has shown a most wonderful interest and devotion to the furtherance of vocational education. District directors appear to be vieing with each other in an effort to outdo each other in promoting the movement, maintaining, however, a most friendly spirit of co-operation. The various districts and the larger cities stage periodic programs designed to bring together all divisions of the trade—apprentices, journeymen, master plumbers and school authorities. Usually these programs are arranged to celebrate some special function, as graduation, and the awarding of diplomas. It has been our purpose to give general support and encouragement to the schools in these undertakings by persuading our members to turn out in most generous numbers.

The Milwaukee association shares also in a general field service maintained by the state association through the employment of a field man who is a trained accountant and attorney, and whose function is largely that of business counsellor. This service has proved extremely helpful to the association membership by guiding and aiding them in clearing up accounting and other business problems.

In conclusion, I wish to emphasize that all is not rosy in Wisconsin. After listening to this long and tiring recital of our activities you might be inclined to infer that we have licked all our problems. I want you to know that we have not yet reached the Utopian state. We are fighting hard and with desperation, with our backs to the wall, so to say, to keep our problems from licking us. However, we are determined, that if our vitality holds out, we shall hold what has been built up over a period of 40 years and force progress if possible. We have resolved, that if choose we must, we shall choose to succumb to exhaustion rather than to perish by starvation.

Keen Interest in Live Topics Features Northern California Federation Meet

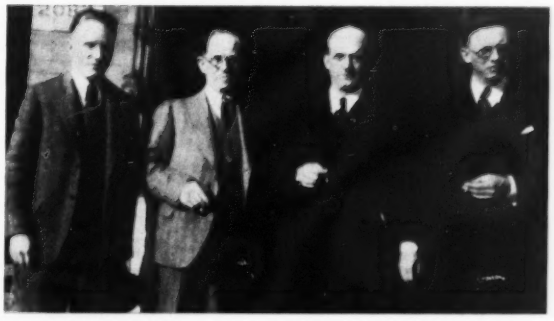
OPEN discussion bearing on a variety of timely subjects, and addresses by competent speakers regarding present day questions vitally affecting the welfare of the master plumber, wholesaler and manufacturer, were the high lights of the third conference of the Northern California Federation of Plumbing and Heating Industries, held at the Whitecotton hotel, Berkeley, on the afternoon and evening of December 5th.

Some indication of the widespread interest in meetings of the federation as well as the actual progress made by that organization in less than a year since its formation, is gained by the fact that two hundred and fifty ladies and gentlemen representing every branch of the plumbing and heating industry were present at the banquet. They were registered from ten counties in central and northern California.

President Alexander Coleman of San Francisco, who is past secretary of the N. A. M. P., opened the afternoon session, which is attended only by master plumbers, and is devoted to discussion of timely subjects. Those in attendance carry back to their local associations the conclusions reached at the close of this discussion. The following questions were brought up:

(1) Are the mail order houses becoming a serious menace to our business? (2) Are we giving the ethical manufacturer and jobber reasonable support? (3) Has the credit situation improved satisfactorily? (4) Are the master plumbers, under present conditions, making satisfactory progress in the merchandising of their wares? (5) How can we combat the growing tendency toward greed and selfishness in our industry? (6) How can we dispose of used fixtures?

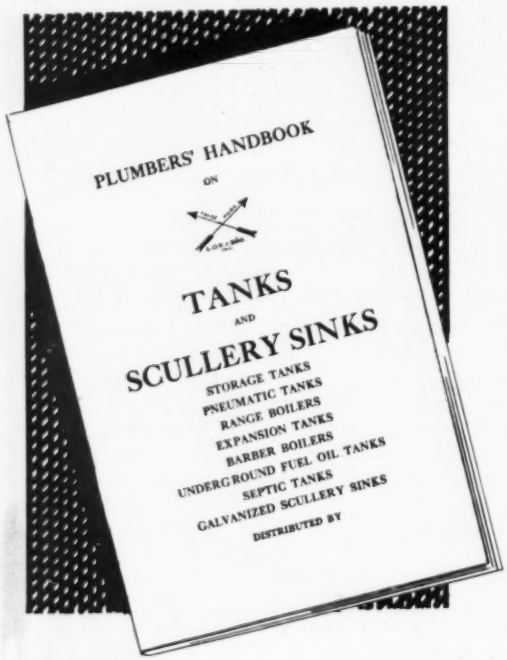
A brief, appropriate address of welcome on behalf of his association was given by President Charles W. Knights of the Merchant Plumbers Association of Berkeley and Albany. Official welcome to the University City was given by Councilman Frank Berg. Mrs. W. D. J. Evans, president of the Women's Auxiliary of the Oakland association, announced the plans for entertaining the ladies at cards while the evening session for the men was in progress. Mrs. Evans headed the committee composed of Mesdames B. T. Schullerts and Arthur Johnson of Berkeley, Harry G. Newman of Oakland and R. W. Timmons of Richmond.



Left to right: Charles W. Knights of Berkeley, president, Merchant Plumbers Association of Berkeley and Albany; Alexander Coleman of San Francisco, president, Northern California Federation of Plumbing and Heating Industries; J. V. Young of San Francisco, president of California State M. P. A.; James F. Mauzy of Walnut Creek, secretary, Northern California federation

At the conclusion of the banquet, President Coleman opened the evening session by pointing out the significance of having such a large representation from among the manufacturers and jobbers in addition to the master plumbers. He introduced Joseph H. Ahlbach, senior member of the firm of Ahlbach & Mayer, plumbing contractors of San Francisco.

Urging a deeper interest by the jobber in the selling



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efforts of the retailing branch, Mr. Ahlbach indicated the need for this by stating that salesmanship of the sort required today—or salesmanship of any sort, for that matter—has never been learned properly by the rank and file of the plumbers. "Selling plumbing goods today, especially in modernizing work, calls for special sales ability," he said, and added "we were never taught to sell; our training was concerned chiefly with learning our trade." Turning to the matter of trade conditions, Mr. Ahlbach deplored the practice of many wholesalers who sell bills of goods to the owners of hotels, apartment houses and office buildings at the same figure quoted the plumber. "Frankly, I fail to see any justice in this. The owner of a hotel, apartment house or an office building buys strictly for his own use, whereas we buy for re-sale purposes."

Indicating another practice he would like to see corrected, Mr. Ahlbach recounted a recent experience wherein he was asked to bid on a piece of residence work. Arriving on the job he found all the material—both fittings and fixtures—ready to install. He declined the job. "Apparently the owner had some friend who knew someone whose cousin worked in a wholesale house, that gave him the same price at which I could buy these goods." The speaker then proceeded to show that such practice was not common in many other industries, supporting his argument by citing his futile attempts to secure, through substantial influence, a discount on a gas range from one firm and a phonograph from another.

To stimulate the flow of goods at the point where they pass into the consumer's hands, Mr. Ahlbach urged that every wholesaler should have a promotion man—one whose duties consisted solely in working with the retailer, assisting him in developing more prospects, serving as a source of information in highly technical matters often brought up by owners and architects, helping him to close more sales, and generally strengthening the relations between the master plumber and his customers. "If our business is going to survive," concluded Mr. Ahlbach, "there will have to be a far greater measure of co-operation between all our industrial branches."

Reuben H. Chase, general manager of the Plant Rubber & Asbestos Co., requested the application of the principles of salesmanship to every branch of an organization. "You say, 'Can my delivery boy and my mechanics help to swell my sales volume?' I say 'Yes.'" Mr. Chase then showed how much more weight was frequently carried to the mind of the customer through the word of the man who works with tools than by the customary sales talk.

"Selling in overalls is becoming more potent every day," he continued. "Your salesman seldom gets beyond the front door; but your journeyman has the advantage of being called in, and his word is listened to more carefully than the talk of the professional salesman."

Mr. Chase held that there is much about salesmanship that needs debunking. "There's no mystery about it. It's just plain alertness, an understanding of your goods, and plenty of common sense and persistence."

C. C. Pastor, general manager of the Good Manufacturing Co. of New York, held everyone's close attention with his brief, pertinent remarks on the subject of serv-

ice. Mr. Pastor drew a striking parallel between the automotive and the plumbing and heating industries with respect to the changing trend in the demands for service.

Hollis R. Thompson, city manager of Berkeley, said in part: "We find need today for sitting down together and talking over things in order to enjoy the full benefits of what has been accomplished by each other. Recent commercial history has been written around the beneficent results of working in conjunction with the other fellow, rather than strictly as individuals." Drawing from his varied fund of administrative experience, Mr. Thompson pointed out the underlying reason for civic regulations, specifically those governing the installation of gas appliances, plumbing fixtures, heating equipment, etc., all of which he held to be the expression of the desire that the greatest number might live together with a maximum of safety, good health and happiness.

President Coleman announced that at the invitation of the Sonoma County M. P. A. the next federation meeting would be held at Sonoma Mission Inn, Boyes Springs.

A Manufacturer, a Wholesaler and a Contractor Discuss the Industry's Problems

(Continued from Page 21)

bers have awakened to the fact that they must do something to help the industry, which is now in the position of a boat in a storm with all three units in the boat. Either they all sink or they all survive. There is only so much work to be done, and it should be accomplished at a fair profit.

"However, the manufacturer and the jobber are not entirely to blame. The plumber has also done his share in creating the present situation by patronizing would-be wholesalers, brokers, agents, and other fly-by-night concerns. He has also accepted preferentials, extra cash discounts and presents of sets of fixtures. It is obvious that all three units in the industry must reform if the situation is to be cleared up. If the manufacturer and jobber will give the plumber a chance to compete with the direct selling houses, he will go after the business. However, he can hardly be expected to do so on the basis of a 10 per cent mark-up when it probably costs him 20 or 25 per cent to operate. The development of the master plumber into a retail merchant during the past ten years has been surprising."

Care and Protection of Enamel Finishes

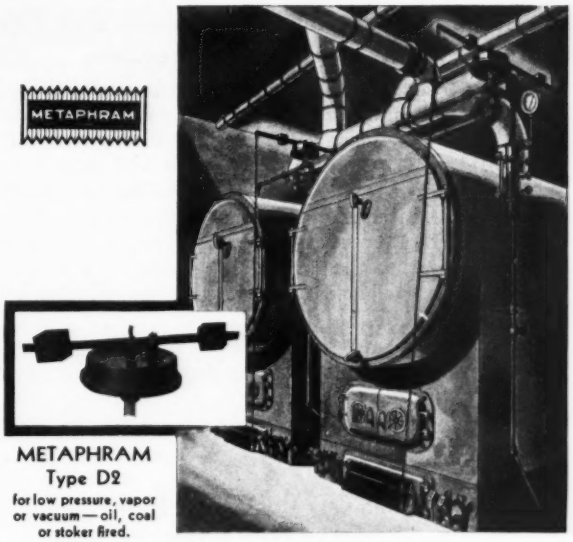
(Continued from Page 41)

3. Don't permit anyone to stand in or on the ware, for sand, mortar and the rough soles of shoes will scratch the finish.

4. Don't permit the ware to be used for supporting scaffolding.

5. Don't permit acid solutions used in washing tile walls and floors, strong alkalies, strong soaps or sour paste to come in contact with the ware, for they will spoil the finish.

6. Don't strain in connecting fittings, attaching legs, supports, etc. Undue stress may damage the finish.



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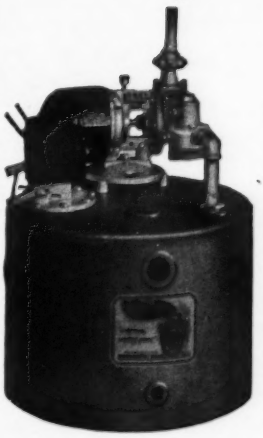
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Automatic switch action guarantees the full protection of your heating boiler at all times, day or night.

Burks Super Turbine Pumps, even when abused, will keep on "keeping on." They are built for hard service and require no coaxing or special attention.

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Condensation Return Bulletin No. 95
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Both new, and yours on request.

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Swade Elected President of North and West Side Master Plumbers' Pleasure Club

Henry Swade, who has acted as chairman of the entertainment committee for the last year, was elected president for the coming year of the North and West Side Master Plumbers' Pleasure Club of Chicago at a meeting at the Logan Square Athletic Club on December 2. The meeting followed a turkey dinner at the club, at which fifty-five members and guests were present. Previous to the dinner, the plumbers won three games in a bowling match with a team of Standard Sanitary Mfg. Co.

Other officers elected and re-elected for the next year were L. P. Markowski, vice president; H. H. Diedesch, financial secretary; Fred Sorge, recording secretary; Henry Breyer, treasurer, and Alfred Grosch, sergeant-at-arms.

◆

Oklahoma City Contractors Move to Attractive New Quarters

Cosgrove & Maher, plumbing and heating contractors of Oklahoma City, Okla., moved into their attractive new quarters on December 1. They occupy a large tract of land at 1001-05 West Washington street and use three buildings. The main building is beautifully furnished and consists of three separate rooms. In the front is a general office and reception room, and behind that is a drafting and estimating room with large tables for laying out plans. The rear room is used as a private office by Jas. J. Cosgrove and William Maher.

At the rear of the main building is another building which is used as a stock room and work shop. It contains bins for fittings, pipe racks, and other equipment. At the rear of this building is a large shed for soil pipe and soil pipe fittings. A spur of the railroad runs along side of this building, with facilities for unloading carload shipments.

Although there has been no official house-warming as yet, many representatives from all three branches of the industry have come to inspect the new quarters. Both Mr. Maher and Mr. Cosgrove are active in trade circles, the latter having served as president of the Oklahoma Master Plumbers' Association during the 1930-31 term.

◆

Apprentice Class Graduated from S. F. Trade School

Marking the close of their three-year period of intensive training, a class of sixteen young men were graduated with appropriate ceremonies from the apprenticeship ranks to the rating of junior mechanics when they were awarded their advanced rate certificates by the Industrial Association of San Francisco, Calif., at Master Plumbers' Hall, 120 Page street, on the evening of November 20. The Industrial association maintains a highly efficient group of training schools, prominent among them being the plumbing school under the direct supervision of Instructor J. C. Staudinger. W. G. Storie is the director of training. Members of the newly graduated class have just completed their apprenticeship course and passed their examinations; they are now required to work and attend school for a minimum of two years as junior mechanics before being eligible for the examination and rating of journeymen. During their training period they are obliged to maintain a high standard of work in the shops where they are employed, at the same time making satisfactory progress with their studies at the Industrial night school.

As presiding officer of the San Francisco M. P. A., President J. V. Young, who is likewise president of the California state association, opened the evening's program by citing briefly the many advantages enjoyed by the plumbing apprentice of today, notably those offered by the local school. Turning to the class soon to become junior mechanics, he said in part, "Tonight will mark a very definite milestone in your career. I hope you will continue to plan ahead and follow through." Mr. Young then introduced Paul Eliel, director of the industrial relations of the San Francisco Industrial association.

Continuing with the thought expressed by Mr. Young,

Class of graduating apprentices at San Francisco, Calif., trade school. J. V. Young, president of the California Merchant Plumbers Association (right) presents wallets containing certificates. Chief Plumbing Inspector William B. Hobro is at the extreme right

Mr. Eliel further emphasized the step in training just completed by the class of graduating apprentices. "This is, indeed, a definite milestone: it is not only the first and most difficult one, but the most important." The speaker then recalled the first class of apprentices to take up training in the association's school nine years ago when volunteers from the ranks of the San Francisco Master Plumbers Association acted as instructors.

Training Director Storie stated that 700 young men have gone through the apprentice class since the opening of the plumbing school; he also touched on the splendid co-operative work of the apprenticeship committee of the local M. P. A., headed by Chairman Joseph Rohr, and the rules under which such training has been carried on. Due to the policy of carefully regulating the number of boys taken on for schooling, it was shown that there are no more than six idle apprentices and a like number of junior mechanics out of work in San Francisco today. Referring to the recent addition of oxy-acetylene welding and cutting to the school curriculum, for which five outfits have been provided, Mr. Storie added "This means that we can now offer the services of trained welders when needed, instead of having to send elsewhere for them."

Instructor J. C. Staudinger's talk was likewise well received. "The previous speakers have told you of the past. Permit me to talk to you of the future—and I am now speaking to the boys. In a few words, become a real asset to your employer, not a liability. Be the sort of a worker that is not obliged to go from door to door looking for a job. After you have been working at the trade for eight or ten years you will then reap the benefit of thinking out and working out your own problems instead of running to this man or that man for further instructions. Keep on studying hard; maintain your attendance at school; never let any man limit your output; always turn in an honest day's work. Remember, you can't lay down on the job without losing your self-respect and being found out, in the bargain."

Addressing his remarks to the master plumbers, Mr. Staudinger continued: "When you took these boys into your shops you assumed a distinct moral obligation. As I see it, the best way to discharge this obligation is by interesting yourself in their welfare, not only in their work but in their spare time contacts, as well." The instructor then counselled the masters to pay particular attention to the apprentices' school record books, which show their attendance, their grades, general standing, and so on. He concluded by thanking the master plumbers for their loyal support in assisting the school in its training work.

William B. Hobro, chief plumbing inspector of San Francisco, reviewed some of his early-day experiences in the city. Turning to the new junior mechanics, he pointed out the value of good workmanship, "and by so doing you will earn a reputation that will stand you in good stead, besides reflecting credit on your employer." Mr. Hobro gave many interesting sidelights on his recent eastern trip, the most enlightening feature being concerned with the plumbing and heating installation in the Empire State building, New York City. His chief interest in making this trip was to attend the meeting

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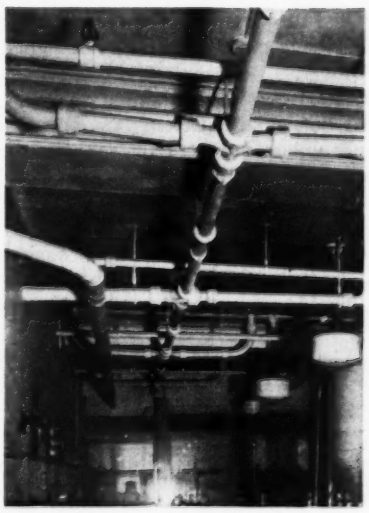
wherever there are ACID WASTES



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UNITED HOTELS

of the American Society of Sanitary Engineering, held in Richmond, Va., when he was elected second vice president.

President Young of the San Francisco M. P. A. presented junior mechanics certificates to: James Sawaya, Ralph Odegard, Henry Wilshusen, W. T. Smith, Knute Kleinen, Harold Cram, Ralph Cook, J. Pagano, E. Zanatti, J. Gomersal, R. Oakley, Ray L. Nivrarel, G. W. Young, W. G. Lenke, A. Gregoire and E. J. Balling.

President Calls Building Industry to First National Conference

(Continued from Page 27)

fective closet, namely, the siphon jet bowl. The high-flush tank has largely given way to the low flush tank and the flush valve.

The plumbing industry has taken advantage of the opportunities that the machine age has created and has utilized them to the fullest advantage in improveing manufacturing methods, as well as the quality, the appearance, the sanitary aspects, and the efficiency of the fixtures and materials that go to make up a plumbing system. Thus, coloring has been added to pottery and enameled iron so that all sorts of color schemes may be carried out to satisfy the most exacting tastes.

Emphasis is warranted in the full report of this committee upon the importance of quick and thorough removal of waste water and careful consideration of all principles, factors, and units involved.

These factors pertain to traps, venting, and air circulation as safeguards against sewage gas, dead ends, drainage systems, and materials used. They also comprehend the sizes of soil and waste stacks, vent stacks, rain water leaders, slope of pipes, clean outs, and the larger problems of sewage disposal.

Jury Decides Meaning of "Cost-Plus"

(Continued from Page 42)

terms and provisions of the original general contract.

The defense maintained that the language just referred to had no particular significance when it was part of a sixty page general contract not signed or initialed by the plumber.

The Court then charged the jury that the plumber was not, as a matter of law, bound by the general contract unless from all the circumstances the oral agreement as to extra work was found to have been made in express reliance upon the general contract, and the jury was likewise instructed by the Judge to consider whether or not the oral contract was inconsistent with the general contract.

The Jury remained out another hour and then found the defendant "Not Guilty."

The case excited great interest and discussion in business, as well as in legal circles.

Conviction on the three charges would have been for Grand Larceny in the First Degree with resulting penalties in all probability of a term of thirty years in Sing Sing.

ANSWERED

A few of the Questions of most general interest asked by readers and answered by our engineers

In this issue

1—Correcting a One-Pipe Gravity Steam Heating Installation

2—Will Anti-Freeze Lower the Boiling Rate of Water in a Hot Water Heating System

—1—

To the Editor:

Enclosed you will find a blueprint of the basement, Fig. 1, and another of the first floor, Fig. 2, with the radiators and run of pipe shown thereon for a one-pipe gravity steam heating installation. I would appreciate it if you could look this over and inform me as to what corrections I can make to remedy the trouble. There is a cast iron vertical boiler and 535 sq. ft. of radiation installed in this system—which was put in about three years ago—and apparently it has proved to be unsatisfactory. The first floor has ample heating, or is too warm, while the basement is very cool.

The boiler, radiators and piping together with the sizes as shown on the plans in Fig. 1 and Fig. 2 are as now installed and the ceiling radiators are hung about five inches below the ceiling. The boiler is set flush on the basement floor and there is about 24 in. between the boiler water line and the lowest point on the steam main; chimney is 8 in. x 12 in. and 30 ft. high; the approximate grade around the building is about 4 ft., below the first floor level. Can you check over the radiation and its location as well as the piping layout? Would you advise a small unit heater placed in the east corner?

G. W.

We have gone over the sketches submitted by our correspondent and have calculated the size of radiators which should be installed on this job. The rather surprising fact develops that on the first floor the surface is a whole lot short but our correspondent informs us that

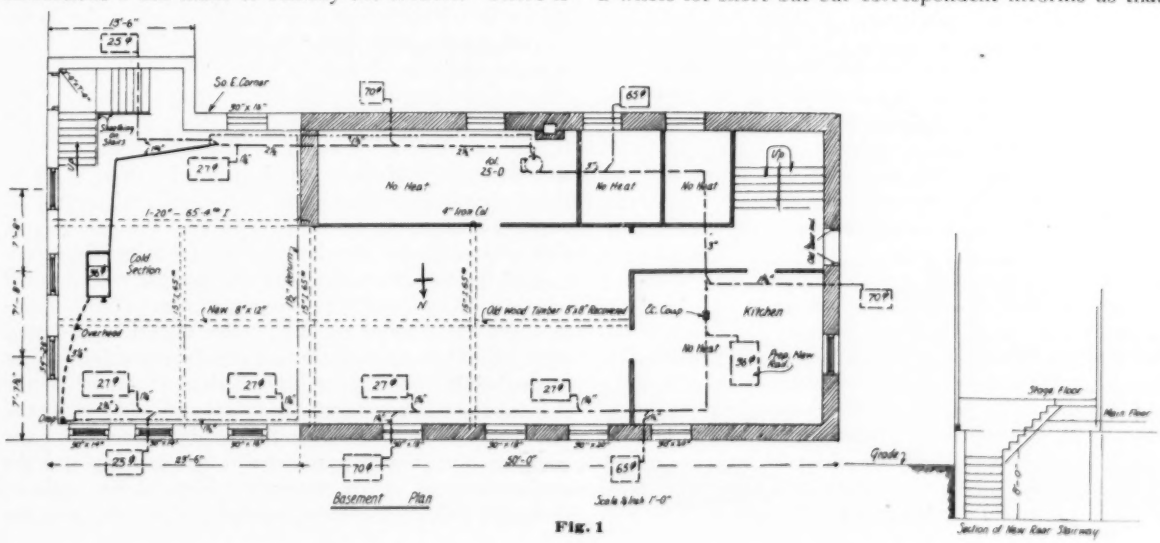


Fig. 1

on this level no difficulty is being experienced. The sketches show 265 sq. ft. of radiation installed in the auditorium where our calculations indicate that 382 sq. ft. are needed; in the vestibule no radiation is installed but about 40 sq. ft. should be placed there in order to kill cold draughts from the outside door. There is no radiation at all on the stage but there is a large cold ceiling above the stage indicating the requirement of about 15 sq. ft. at that point. The spaces back of the stage require about 76 sq. ft. and only 50 is installed. In the lobby there should be 76 sq. ft. and only 50 sq. ft. has been put in. This makes the total radiation shortage on this floor about 193 sq. ft. which is an increase of 50 per cent over that in place.

The easiest way to supply the deficiency would be to add two radiators in the auditorium, one of 70 sq. ft. on the north side and one of 65 sq. ft. on the south side as indicated on the plan. Also to place one radiator of 15 sq. ft. on the stage and two radiators of 20 sq. ft. each in the vestibule all as indicated on Fig. 2, and this

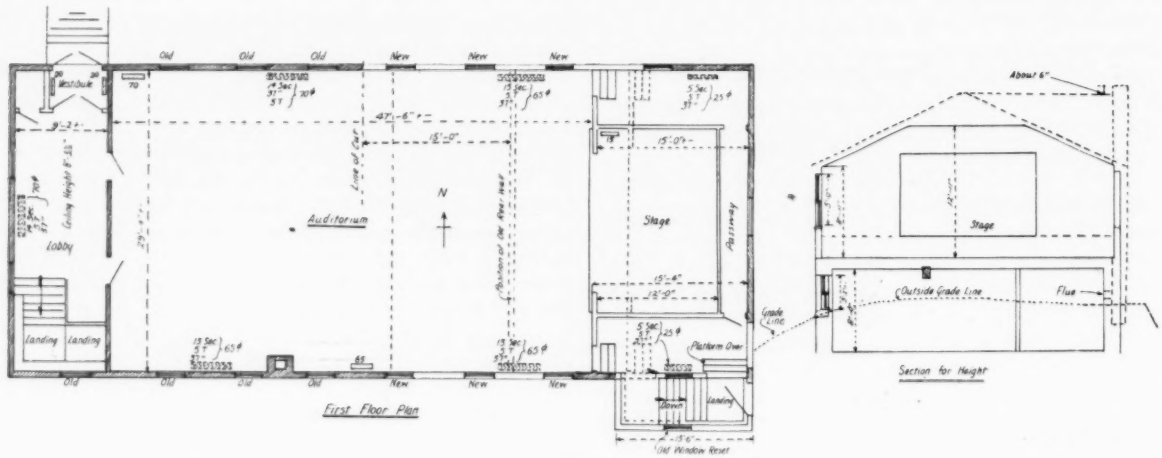


Fig. 2

will bring the total up to 575 sq. ft. on the first floor where the calculations indicate 578 sq. ft. required. The radiation in the lobby and in the space back of the stage may be allowed to remain as it is for, although a little short, the heating requirements in these rooms may be assumed as not being as exacting as in the other spaces. Of course there is heat enough in this auditorium to keep it warm after it is filled with people but there certainly is not enough to bring it up to 70 deg. F. on a zero night before the occupants arrive.

Proceeding now to the basement it is found that, by calculation, the radiation, and the position of the radiators, is satisfactory in every case but one, this being in the large room at the foot of the stairs where there is a shortage of about 36 sq. ft., and we have shown a radiator of this size added in this room in Fig. 1. This, of course, is on the basis of a constantly operated job but if steam is left off of the building for long periods it would be difficult to heat the basement even with twice the amount of radiation installed owing to the heavy stone walls and the floor laying on cold ground both of which would absorb large quantities of heat for a long time after heat was turned on and, consequently, would be cold and make the basement cold until such time as they and the earth adjacent had had time to warm up.

If the steam main is covered in the basement the removal of this covering would aid considerably in providing an additional heat supply for this section but the 36 sq. ft. should be added anyway.

In regard to the piping this is of ample size to insure a good circulation if properly pitched. We do not approve the installation of wall radiators laid flat on the ceiling and connected up one-pipe; it is much better to install these with a small drip on the return end, this drip being connected into the wet return separately and the radiator pitched toward the return end. The main is very much unbalanced in the way the radiators are connected, one branch carrying 439 sq. ft. and the other only 122 sq. ft. The addition of the 36 sq. ft. radiator suggested will help this some but not very much. Nevertheless the piping is of ample size and should give every satisfaction in circulation if there is a good grade carried as mentioned before. In fact the main and the wet return is sufficiently large to allow all the radiation, suggested as desirable to add on the first floor, being attached with no changes in pipe size especially if most of this new radiation is put on the lightly loaded branch.

The boiler should have a grate area of not less than 3½ sq. ft. for the job as it now is, 3¾ sq. ft. if the 36 sq. ft. radiator is added in the basement and 5 sq. ft. if the upstairs radiation is put in too. The 8 in. x 12 in. chimney has ample area for any of these grate areas but the height of the chimney is a little low; it should be 35 ft. high if either a 3½ sq. ft. or 3¾ sq. ft. grate is used and 40 ft. high if the 5 sq. ft. grate is used. This is based on burning a maximum of 6 lb. of coal per sq. ft. of grate area per hour in zero weather. We particularly desire to point out the desirability of having air valves located on the steam main at the end of each branch where it drops down into the wet return. If the radiators could be lowered to 12 in. below the ceiling it would help some, but we suspect that this is impossible owing to the height of the main at the high end; the use of the drip on the return end of the radiator would permit the radiators to be lowered as the condensation from the radiators then would pass out through the drip and the radiators could be set below the level of the main if desired. Without knowing anything about the way the

system is operated we are inclined to suspect that the real cause of most of the trouble is allowing the building walls and floor to get thoroughly cooled down during extended periods when the heat is not on and that it takes a long time to heat up after the heat is started again.

—2—

To the Editor:

I have read with much interest your "Question and Answer" column and now have a question on which I wish you would give me some help. Will the addition of some good anti-freeze in a two-pipe closed hot water heating system tend to lower the boiling rate of the water and thereby increase the efficiency? What is the solution used and how much?

New York. E. A. H.

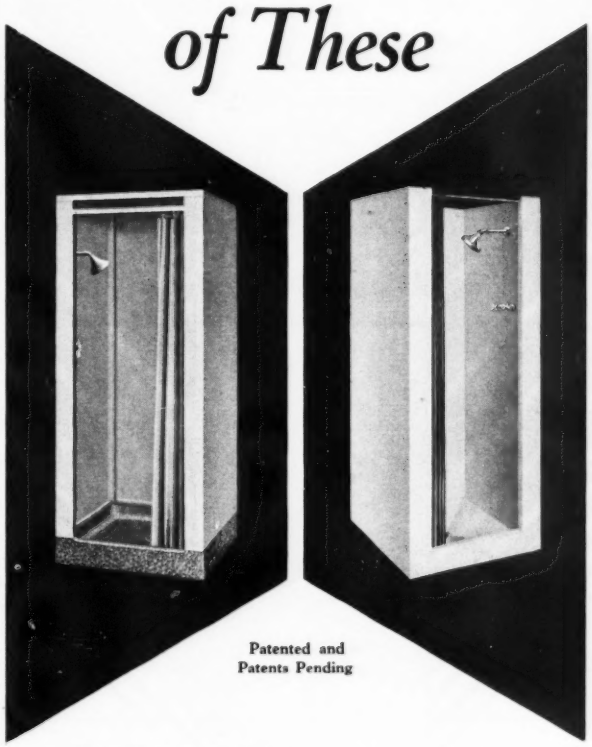
There are a large number of liquids and solids which used alone or in combination with water will lower the freezing point of the mixture. The exact point at which freezing will occur with mixtures of water and some other material generally depends on the strength of the solution; the larger the proportion of water the higher the temperature at which freezing will take place. Where pure materials are used the freezing point is definitely fixed as for example, if pure alcohol is used the freezing point will be 148 F. below zero; ammonia, 108 F. below zero; chloroform, 83 F. below zero. Of course, such low temperatures are never encountered in the ordinary motor car, to say nothing of a hot water system protected inside of a structure. For this reason it is not necessary to use a different medium in order to prevent freezing at temperatures around zero.

Water mixed with other ingredients will freeze as follows:

Water and 40 per cent glycerine	1 F
Water and 50 per cent glycerine	—26 F
Water and 28 per cent alcohol	0 F
Water and 30 per cent alcohol	—4 F
Water and 33 1-3 per cent alcohol	—11 F
Water and 25 per cent salt	10 F
Water and 33 1-3 per cent salt	—5 F
Water and 20 per cent calcium chloride	0 F
Water saturated with cal. ch.	—40 F
Five parts water, 2 parts salt and 1 part ammonia chloride	—12 F
Twelve parts water, 5 parts salt and 5 parts nitrate of ammonia	—25 F

The addition of salt to the water while it will lower the freezing point, also will raise the boiling point as salt water requires a slightly higher temperature to boil than ordinary fresh water; most liquids which have a lower vaporizing temperature than water, when added to water, will reduce the vaporizing temperature of the mixture. Different mixtures, however, act in different ways and we have known of cases where kerosene has been added to the water in steam boilers that were slightly overloaded and resulted in the boilers carrying the load without difficulty. The only cases which we have heard of in which anti-freezing compounds were added to hot water heating systems have been in instances where it was feared that the returns run under the floors and in un-

Profit from Either of These



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Where appearance and harmony with surroundings is of prime importance, the Weisway shower cabinet with its art marble receptor is recommended. For installation in less elaborate surroundings, the WeiSteel Integral cabinet is often used.

We shall be glad to send full details concerning either or both of these easy-to-sell, easy-to-install units. You will be under no obligation in asking for further information.

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THE popularity of the Merion Water Heater with both user and contractor is the finest proof of its worth. You, too, should sell Merion Water Heaters. They give you bigger profits and your customer greater satisfaction.

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heated spaces might freeze and was *not* for the purpose of acquiring any increase in efficiency of the system from a heat standpoint. Neither have we heard of any increased efficiency being obtained where this was done.

Some advantage might accrue in a steam system by lowering the boiling point of the water in mild weather when the full heat delivery is not required but this would have the very serious complaint of requiring a much higher pressure in order to give the same heat delivery in days of extreme temperature. On a closed hot water heating system the lowering of the boiling point would be working exactly opposite to what the closed tank is trying to accomplish; that is to say, the closed tank is putting artificial pressure on the system in order to carry the water up to the highest radiators *and* to permit raising the water to a higher temperature without boiling the water when the full heat delivery is required. The necessity of holding the water down to a lower temperature to prevent boiling would defeat the object of the closed tank—or a portion of its purpose—by reducing the very temperature that the tank otherwise would make possible.

Incidentally there are some other factors to be considered in regard to introducing foreign materials in any heating system. The effect on the piping and valves may be detrimental; the extremely hot surfaces in the boiler directly over the fire may build up deposits, etc.

Questions Answered and Discussed by Readers

How the Question Was Answered

The following question was asked in the issue of November 28, and the accompanying answers are by readers:

In the event that, say, a Frenchman who has just come to this country should tell you the temperature in his livingroom is 19 deg. Centigrade and that he likes to keep it up to 22 deg. Centigrade, what corresponding temperatures on the Fahrenheit scale would he be referring to? The Centigrade scale is the common standard in France just as the Fahrenheit scale is the popular standard here.

How Would You Answer This Question?

A storage tank 4 ft. by 12 ft. which contains approximately 1,100 gallons carries a pressure of 60 lb. and is half full of water. How much water can be used from the tank before the pressure is reduced to 35 lb. Also, if the tank is cut off from the city pressure, how many cubic feet of air will be required to maintain the pressure at 35 lb. if water is drawn off at the rate of 35 gallons per minute?

Answers based upon your experience, and suitable, will be paid for and published in the January 23 issue.

—1—

THE distance between two points which were marked on a glass tube of very slender bore terminating in a bulb containing mercury when the bulb was immersed in a mixture of pure melting ice (32 degrees)

and again when the bulb was immersed in water boiling at sea level (212 degrees) was divided into 180 equal spaces or degrees by Fahrenheit, the man after whom the thermometer was named. The same spacing was used to extend the scale downward below 32 degrees and upward beyond 212 degrees. In this country the Fahrenheit is the scale in general use outside chemical and physical laboratories where the Centigrade is used almost exclusively.

The Centigrade scale, proposed by Celsius is based on the two same fixed points, but the point of melting ice was marked zero degrees and the boiling point of water marked 100 degrees. The intervening distance was divided into 100 spaces. The decimal basis of this division simplifies computation. Since 100 Centigrade spaces represents 180 Fahrenheit spaces, then each Centigrade space is equal to $\frac{100}{180}$ or $\frac{5}{9}$ of a Fahrenheit space.

The temperature indications by one scale may be converted into those of another as follows: To convert degrees Fahrenheit to degree Centigrade, first subtract 32 and then multiply by 5/9. To reduce degrees Centigrade to Fahrenheit, first multiply by 9/5 then add 32.

For example: to convert 19 degrees Centrigrade to Fahrenheit readings:

$9/5 \times 19° = 34.2$
$34.2 + 32 = 66.2$ deg. Fahr., which is the existing temperature in the Frenchman's home.

And:

$9/5 \times 22° = 39.6$
$39.6 + 32 = 71.6$ deg. Fahr., which is the temperature he desires to maintain in his home.

—2—

THE corresponding temperature asked for in your question would be:
Cent. 19° = F. 66 1/5°
Cent. 22° = F. 71 3/5°
and if we happened to be in Russia:

Cent. 19° = 15.2° Reaumur
Cent. 22° = 17.6° Reaumur

The following is a good and simple rule by which conversions can be made easily, bearing in mind that the freezing and boiling points differ on each scale:

F. Boil. Point	212°	Freez. Point 32°	Diff. 180°
Cent. Boil Point	100°	Freez. Point 0°	Diff. 100°
Reaumur B. P.	80°	Freez. Point 0°	Diff. 80°

to reduce F to C	$F - 32 \times 5/9$
C to F	$C \times 9/5 + 32$
F to R	$F - 32 \times 4/9$
R to F	$R \times 9/4 + 32$
C to R	$C - 1\text{-}5\ C$
R to C	$R + \frac{1}{4}\ R$

◆

Is Appointed Bank Director

Edward F. Crawford, of M. B. Crawford & Son, plumbing and heating concern of Oswego, N. Y., has been elected a trustee of the Oswego City Savings Bank.

To Our Friends in Every Branch of the Industry

WITH the passage of time it again becomes our privilege and pleasure to extend sincere wishes for your prosperity and success for the coming year.

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Originators, Designers and Sole Manufacturers
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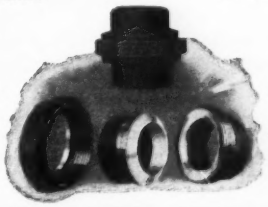

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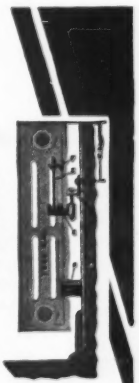
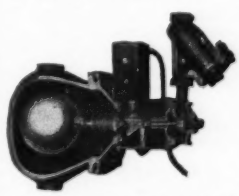


Style "C"

Don't tell 'em to forget « « « « and then ask 'em to remember!



When a man pays for automatic heat, he buys the right to forget his boiler room. He can do this if his oil-burner, stoker or gas burner is protected by a McDonnell No. 30 Series Safety Feeder with No. 31 Emergency Switch. There is a size for every type and size of boiler—and a good profit in every job.

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LOOK FOR OUR CATALOG in SWEET'S ARCHITECTURAL CATALOGS

Humidification in Residences

(Continued from Page 30)

while the temperature of the inside air is maintained at 70 deg. Fahr.

Since glass window panes have a heat insulating value much less than that of a frame wall, the inside surface temperature will be lower than that of the frame wall under the same conditions. These inside surface temperatures for three types of windows, single glass panes, double glazed windows with ⅛-in. space between the glass panes, the storm sashed windows with 1½-in. between the glass panes, for various outdoor temperatures, are shown in Fig. 3. From the curves it may be noted that as the outdoor temperature changes from —20 deg. Fahr. to 69 deg. Fahr., the temperature of the inside surface of single glass panes varies from 2 deg. Fahr. to 69 deg. Fahr., while that for the windows with storm sash varies from 36 deg. Fahr. to 69 deg. Fahr. That is, the windows with storm sash are much warmer. These curves are based on the assumption that the storm sash is fitted tightly against felt strips to prevent cold air filtering in between panes, and not hung loosely as found in many faulty installations.

The inside surface temperatures have a direct bearing on the comfort of the occupants inasmuch as cold surfaces increase the radiation loss from the body and give rise to a feeling of chilliness even when the air temperature is sufficiently high for comfort. They have more direct bearing, however, on limiting the percentage of relative humidity that can be carried in the room without obtaining objectionable condensation on the surfaces.

This is to be continued in an early issue. Experimental results cited in this and in coming articles were obtained as part of the work of the Engineering Experiment Station of the University of Illinois, of which Dean M. S. Ketchum is the director, and of the Department of Mechanical Engineering, of which Prof. A. C. Willard is the head. The particular investigations were conducted under the direction of Prof. A. C. Willard.

A Triple-Duty Heating Job

(Continued from Page 32)

new and one, with its stoker, which was moved from the old heating plant. All boilers were designed for operation at a pressure of 250 lb. They are equipped to give a superheat of 150 deg. at full load. The stokers are of the underfeed type and have 25 tuyeres and eight retorts each. Boilers are also equipped with soot blowers and feedwater regulators. The boiler feed pumps have a capacity of 150,000 gal. per hour. Two of the pumps are driven by electricity.

Coal is unloaded from railroad cars adjacent to the boiler room. A railroad crane can take the coal and distribute it to an outdoor storage compartment which has a capacity of about 5,000 tons. From the cars the coal can be loaded into a hopper from which a skip hoist lifts it to a 150-ton horizontal elevated storage. Thence it is carried by means of a one-ton weigh larry to the various boilers. Ash is dumped from the bottom through counterweighted gates to push carts and is car-

ried to the same skip hoist. Thence they are lifted to a separate 25-ton ash tank from which they can be dumped either in trucks or railroad cars.

A double steam header has been installed and connections have been made so that any boiler can be isolated for test purposes. All necessary instruments for measuring and regulating water, steam and pressure have been provided, with many special ones, in keeping with the fact that the plant is used as a laboratory by engineering students as well as a heating and power plant. The instruments include indicating and integrating, recording steam flow meters for each boiler and each turbine, draft gauges, boiler feedwater meter, temperature recorders, etc. The evaporator is used for supplying distilled make-up water to the feedwater system. It is equipped with an open type feedwater heater for preheating the raw water to the evaporator, motor driven centrifugal pump for delivering raw water to the evaporator and trap for returning condensate from evaporator to station heater. The evaporator is designed to furnish 12,500 lb. per hr. of make-up water in the form of dry steam at 25 lb. pressure to be used in the heating system.

The complete plant including the new mains represents an investment of slightly more than $700,000. The piping was done by Barney Grunwald of Omaha, Nebr.

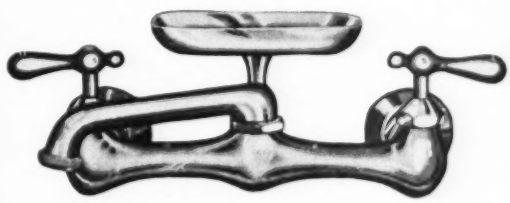
Heating in Residences and Small Structures

(Continued from Page 47)

This completes the subject of hot water heating and steam systems will be taken up in the next chapter beginning with the simple one-pipe steam system.

Radiation	Valve Size	Riser and Runout	Factor	Pipe Size	Size Used
19.1	½	½	2	½	¾
16.4	½	½	2	½	¾
—			—		
35.5			4	¾	1½
27.6	¾	¾	5	¾	¾
—			—		
63.1			9	1	1½
34.2	¾	¾	5	¾	¾
—			—		
97.3			14	1¼	1½
21.4	½	½	2	½	½
—			—		
118.7			16	1¼	1½
24.6	¾	¾	5	¾	½
—			—		
143.3			21	1½	1½
43.7	¾	¾	5	¾	¾
—			—		
187.0			26	1½	2
30.0	¾	¾	5	¾	¾
—			—		
217.0			31	2	2
30.0	¾	¾	5	¾	¾
—			—		
247.0			36	2	2
24.4	¾	¾	5	¾	½
—			—		
271.4			41	2	2

What Housewife would turn this down ?



BEAUTY such as this in kitchen sink faucets has an irresistible appeal to housewives. If you don't believe it, order one from your jobber today and make a few calls on homes and buildings in your community with it.

Stand it up beside the old brass that's installed. Then take your tools and go to work installing it and make yourself a neat little item of profit.

Be sure to ask your jobber for the Enterprise 555 Combination Sink Faucet and if you want one without the soap dish ask for 555A. Both are top spout with all metal handles or, if you wish, you can have it with China handle and dish. Nickel or chromium plated. RENEWABLE SEATS.

We'd suggest you order not one but several from your jobber because they'll move quickly every time you display them or show them. Do it today!

ENTERPRISE BRASS WORKS
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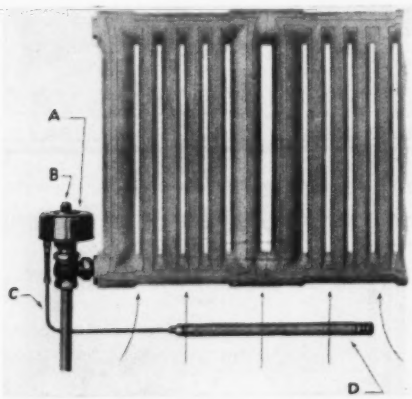
Items for STORE, SHOP *and* JOB

PRESIDENT HOOVER'S committee on fundamental equipment stated at the Washington conference that it has been chiefly concerned with how to make a *home* out of every *house*. Items selected for these columns reflect a similar concern on the part of those developing them.

Temperature Control Device Regulates Radiator Valve

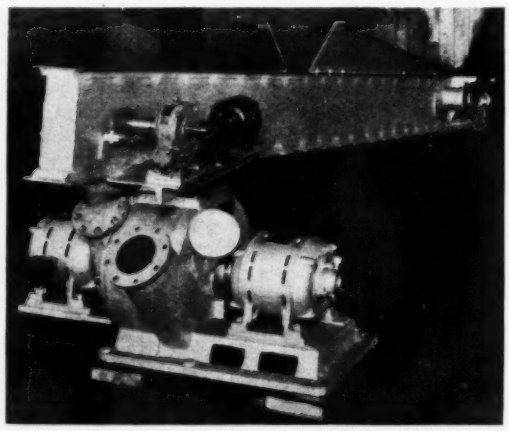
The device referred to herewith has been designed to control the temperature of rooms heated by direct, indirect or concealed radiation of vapor or vacuum heating



systems. The thermostatic element can be obtained in either of two types and can be located, accordingly, in either of two positions. The accompanying illustration shows one type with the element (D) located under the radiator. The arrows indicate the travel of the convection air currents. The second type of element can be mounted on the wall some distance removed from the radiator. In the photograph shown, the connection (C) is flexible tubing which runs from the thermostatic element to the diaphragm operated valve (A). The item referred to as (B) is an adjustment. Where this control device is used to regulate the steam or vapor supply to a unit heater, the tubular thermostatic element is located behind the fan where it is subjected to the room air being drawn to the unit.

Equipment for Firing Domestic Heating Plants with Pulverized Coal

The equipment shown in the accompanying illustration recently has been placed on the market. It is a unit which has been designed to convey slack coal from the coal bin to the pulverizer where the coal is reduced to a fineness such that 85 per cent will pass through a screen having 200 meshes to the lineal inch. The powdered coal then is blown into the boiler. Pulverizing is accomplished by the centrifugal action of two opposed rotors which whip the coal. The rotors revolve in opposite directions about ¼ in. apart and are operated by two electric motors. The design is such as to enable one unit to fire any number of boilers up to the capacity of the unit.



Also, in work, it operates intermittently under completely automatic control.

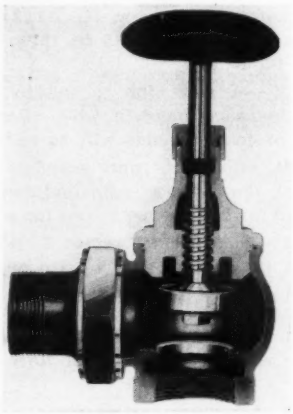
At the present time the sizes range from the 9-in. type with a capacity of from 50 to 150 lb. per hour to the larger types with capacities up to 25 tons per hour.

Readers will find in this department news of our industry's progress in the manufacture of equipment. You can read of the efforts of manufacturers to develop products which will increase customer demand, will make shop methods more efficient and will simplify installation.

A letter to the editor of "Domestic Engineering" will bring you the name and address of the manufacturer of any product in which you are interested.

A Valve for Steam or Vacuum Heating

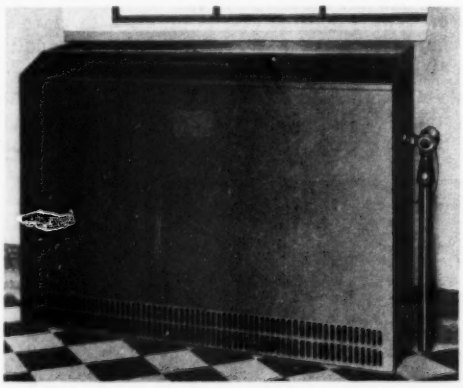
Announcement has been made of a valve which has been designed for use in connection with steam and vacuum heating systems. It was developed so that it



might be repacked under pressure or vacuum. Additional features which have been claimed for it are that it has large operating threads to facilitate opening or closing and that it will not jam in either open or closed positions.

A Ventilator Unit With Variable Features

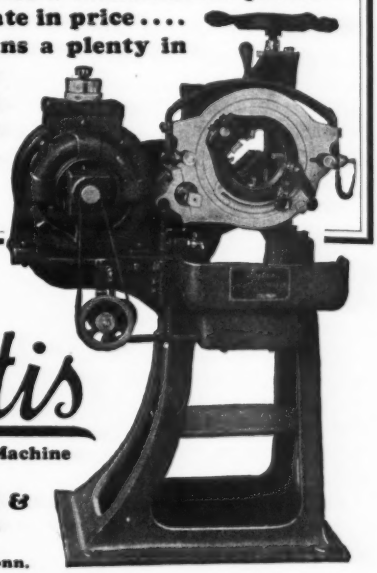
The photograph in this item shows a ventilator unit which has just been announced. It is available in three types. One has been designed with a damper arrangement which will allow the recirculation of 50 per cent room air mixed with 50 per cent outside air. The unit cleans and heats the air before delivery into the room. The second type was developed for ventilation



applications where it is not permissible to recirculate room air. Accordingly, all of the air passing through the unit is taken from the outside. The third type provides for room circulation only.

Dampers are made to shut off outside air when the unit is not in operation, and may be controlled either by a hand knob on the unit or by a solenoid motor with a remote switch.

The Curtis Pipe Threading Machine has been a life-saver to many a contractor through these tough days, because .... it threads bends ... dies turn instead of pipe .... may be hand operated ..... takes a minimum of space .... uses a minimum of power .... moderate in price .... which means a plenty in the matter of doing business successfully.



The Curtis Pipe Threading Machine

THE CURTIS & CURTIS CO.
318 Garden St.
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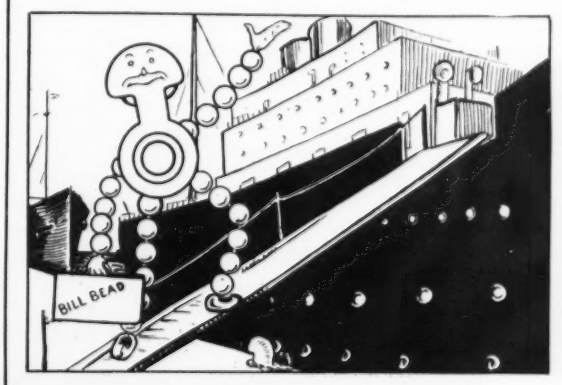

I'M OFF TO FOREIGN LANDS

Sometimes the wanderlust gets me and I travel to distant climes. South America, Europe, Asia, Australia and even Africa.

Be it dry or damp, hot or cold, I will not corrode.

THE BEAD CHAIN MFG. COMPANY BRIDGEPORT, CONNECTICUT

USE BEAD CHAIN FOR PLUMBING
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Large Construction Projects

Even though new construction is at a low ebb compared with recent peak years, the fact remains that new projects are being started every day. Listed below are just a few of the larger building operations, either contemplated or only recently started.

Ossining, N. Y.—The Wheeler Engineering Co. has been awarded the general contract for a new segregation building at Sing Sing prison. The general construction will cost $172,300. John Winkel received the heating contract with a bid of $6,461; and Hyman Homer & Sons were awarded the plumbing contract at $11,220.

New York, N. Y.—Miller Blyth has been awarded the contract for a new office building for the Railway Express Agency, Inc., to be erected at 420 E. 34th street, at a cost of $65,000.

Huron, S. D.—Plans are being discussed for the erection of a $200,000 municipal auditorium recreation building.

Xenia, Ohio—Galbreath & Leonard, Columbus, on a low bid of approximately $85,000, has the contract for the new dining hall at the O. S. and S. O. Home here. The plumbing contract was awarded to Makarius Plumbing Co., Dayton, and the heating contract to the Carmel Co., Columbus.

Philadelphia, Pa.—Plans for a "central" office building to be erected at 54th and Woodland avenues for the Bell Telephone Co. have been filed with the Bureau of Building Inspection. The cost is estimated at $150,000, and work is to start soon.

Mt. Kisco, N. Y.—The village trustees received bids on December 18 for erection of a new $125,000 municipal building. Construction is to start as soon as possible.

Philadelphia, Pa.—Plans will be ready in three or four months for the new $1,000,000 Girls' high school, and the building is expected to be ready for occupancy at the beginning of the fall term next year.

Lima, Ohio—Charles H. Shook, Inc., Dayton, was low bidder for construction of the new Lima Memorial hospital building and also for construction of the nurses' home. His bid was $222,700 for the hospital and $61,000 for the nurses' home.

Glen Cove, N. Y.—The proposed local post office building will be started the first week in February, according to Delano & Aldrich, architects. The cost is estimated at $165,000.

Ithaca, N. Y.—Tompkins County Office building, estimated cost $500,000, three stories, 163 x 75 ft., brick with limestone trim. Jail, 43 x 90 ft., three stories. Architect, J. Laikn Baldridge.

Albion, N. Y.—A new high school, to cost $390,000, will be built in this village in 1932. Bonds have been voted for the project and bids will be called for shortly.

Maywood, Ill.—Contracts were scheduled to be let on December 11 on the new post office building to be erected here. Plans call for two shower rooms for postal employes.

Albion, N. Y.—The firm of James E. Reid, of Buffalo, has received a contract from the state of New York for installation of heating equipment in the Institution for Mentally Defective Delinquent Women at Albion on a bid of $6,271. Plumbing and sanitary work will be done by the Barr and Creelman Company, of Rochester, on a bid of $6,977.

Montclair, N. J.—Plans and specifications for the proposed $375,000 auditorium building to be erected at the Montclair State Teachers College have been completed. It is expected that all bids will be received by the end of this month and that construction will start early in January. Guilbert & Betelle of Newark are the architects.

College Station, Tex.—Construction of an agricultural engineering building to cost $200,000 and the drawing up of plans for four other major buildings has been authorized by the directors of Texas A. & M. College. Work on a swimming pool is to start immediately, and the agricultural building will get under way at an early date.

Philadelphia, Pa.—An eight-story, $1,500,000 building will be erected at 1618 Chestnut street. Demolition of the present building on the site has been started.

Brooklyn, N. Y.—Shampman & Shampman, architects, are drawing plans for the Mangum Holding Co. for a six-story industrial building at 731 Flushing avenue, to cost $300,000.

Butte, Mont.—Construction is expected to start shortly after the first of the year on the $290,000 addition to the Federal building.

Baton Rouge, La.—Favrot & Livaudais, Ltd., New Orleans architects, have drawn plans for the Capitol hotel, which is to be built here. It will cost $650,000, and each

Part of the group attending the recent convention of the Pennsylvania State Association of Master Plumbers at Allentown, on a trip to Indian Trail Park

of the 200 rooms will be equipped with combination tub and shower.

West Allis, Wis.—Allis Chalmers Mfg. Co., Inc., has awarded the general contract to Meredith Bros. Co., 121 E. Washington street, Milwaukee, for the construction here of a $114,000 office building.

Montgomery, Ala.—Samford Bros., Inc., have been awarded the general contract for construction of 21 officers' quarters buildings at Maxwell Field, on a bid of $216,719.

Columbus, Ga.—E. Oren Smith, Columbus, and Edwards & Sayward, Atlanta, have been commissioned as architects for a new $410,000 postoffice building to be erected here.

Norristown, Pa.—Bids will be taken early in the new year for Norristown's proposed $490,000 postoffice, for which Charles Z. Klauder, this city, is consulting architect.

New York, N. Y.—Plans for a 12-story apartment house have been filed with the Manhattan Bureau of Buildings. The structure will cost about $340,000, and will be located at 135 East 39th street. Leo F. Knust is architect.

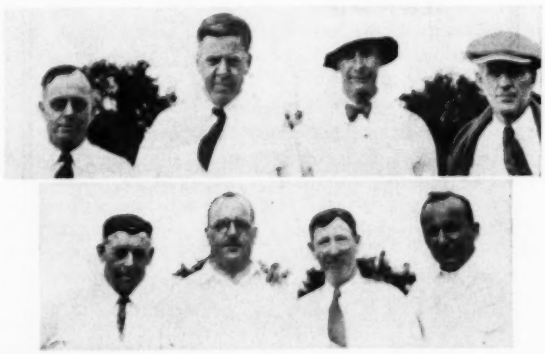
St. Paul, Minn.—W. W. Magee has been awarded the general contract for construction of the new state office building here, on a bid of $1,047,000. Work is to start immediately.

Bad Axe, Mich.—Bids will be taken until January 4, 1932, by the board of supervisors of Tuscola County for construction of a new court house.

Dwight, Ill.—H. C. Willadsen Construction Co., Peoria, has the $91,500 general contract on the new building at Oakdale, the Women's Reformatory. The heating, ventilating and plumbing contract went to John P. Shields, Bloomington.

Catskill, N. Y.—E. P. Valenburgh of this city has been selected as architect for the new $110,000 postoffice to be erected here.

New York, N. Y.—Work on Manhattan's largest freight terminal building will be started within a few weeks as part of the New York Central Railroad's $150,000,000 west side improvement project. The contract for the first unit is expected to be awarded in January, 1932. The building will be known as the New St. John's Park Terminal.



Top row, left to right: Frederic R. Ellis, Buerkel Co., Inc., Boston; Thomas Chester, Pittsburgh; L. C. Soule, Aerofin Corp., Newark, N. J.; W. A. Rowe, American Blower Co., Detroit. Bottom row: D. S. Boyden, Edison Electric Illuminating Co., Boston; A. F. Karlson, Parks-Cramer Co., Fitchburg, Mass.; W. T. Fraser, Emerson Electric Co., St. Louis, Mo.; A. W. Moulder, Grinnell Co., Inc., Providence, R. I. Photos taken at the semi-annual meeting of the American Society of Heating and Ventilating Engineers, held recently at Swampscott, Mass.

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EVERY time you install an IMPROVED "WILHELMI" *All Copper* Boiler you are erecting a lifetime advertisement. The only comeback you will ever get will be from someone who has heard of its fine qualities.

HAYES MFG. CO., Makers **Paterson, N. J.**

SUPERIOR SHOWER HEADS

Why?

No holes to clog.
Uses 50% less water.
Adjustable spray.
Works on low pressure.

LOW PRICED
Ask your jobber.

MILWAUKEE FLUSH VALVE CO., Milwaukee, Wisc.

TABER SUMP PUMPS IN GENERAL USE

Built for 5 ft. pit. Single and Duplex Units

Fig. 1162-A

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The larger Taber Sump and Sewage Pumps are being specified and used on jobs requiring high grade equipment. Following are single unit sizes in general use. . . . 1750 R.P.M. 60 Cycle and Direct Current.

Type	G.P.M.	Head	Outlet,in.	Plate in.	H.P.	Wgt. lbs.
AL-25-2	25	20	1	24	½	272
AL-50-2	50	20	1½	32	¾	350
AL-75-2	75	20	1½	36	1	436
AL-100-2	100	20	2	36	1½	481
AL-150-3	150	20	2½	36	2	607
AL-200-3	200	30	3	36	3	675
AL-300-3	300	30	4	36	5	772

Write for complete Bulletin 88-629

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Taber Pump Co., 290 Elm St., Buffalo, N.Y.

IT COSTS NO MORE

—yet experience in buildings of all kinds proves it puts an end to difficulties due to expansion and contraction in soil, vent and waste lines.

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EXPANHUB SOIL PIPE

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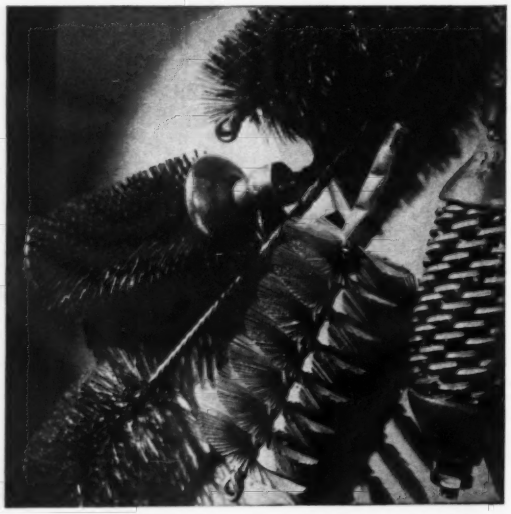

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Every brush made in accordance with tried and true design. Every wire must pass a rigid inspection, and—the wires *cannot* come out.

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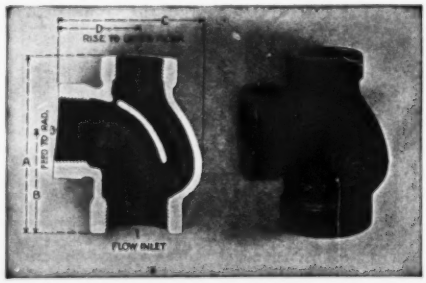

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These successful fittings save labor, extra fittings and joints. They eliminate entirely the use of ordinary elbows, tees and nipples, and make it easy to keep risers in line.

Features of the Blake O/S are perfect circulation and uniform distribution of hot water to all radiators. Made in cast iron, galvanized or brass. Save money on distributor fittings—give complete satisfaction to your customers.

Sold by jobbers everywhere

"Make No Mistake—Use The Tested Blake"

BLAKE SPECIALTY COMPANY
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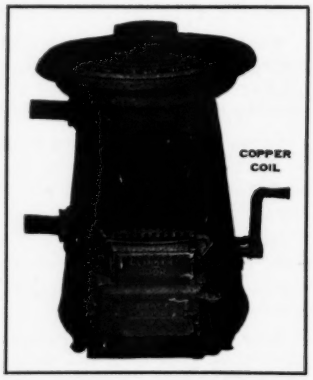
Hot Water Service

at a *minimum* of *time* and *expense* with



CLE-BAR WATER HEATERS

The perfect hot water service for the modern home is furnished by a Cle-Bar.

The copper coil in the Cle-Bar guarantees a supply of rustless hot water almost at once.

Remember too, that one shovel full of coal a day is all the fuel necessary to supply an abundance of hot water for the average family.

Write for full information

CLEGHORN COMPANY
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C. S. B. SPRINKLER HEADS

Every genuine C. S. B. Head is stamped with the fusing degree and the date of seal.

If the Sprinkler Heads you recommend are not so stamped, then they are not C. S. B. Heads, and you cannot be sure of C. S. B. quality and protection.

Why be without it when it is so easy to get? Drop us a line requesting information. We will forward literature immediately.

C. S. B. SPRINKLER CO.
86 BROAD ST. BOSTON, MASS.

New Trade Literature

Seamless Fittings for Pipe Welding

Tube-Turns, Inc., Louisville, Ky., has recently issued a Bulletin describing its new Series 1R seamless fittings for pipe welding of its manufacture. The sheet is printed on cardboard and is designed for insertion in the company's Bulletin 103, 104, or 105.

New Bulletin of Armstrong Machine Works

Users of steam traps in hundreds of different industries last month received their first copies of a bulletin, "The Armstrong Trap Magazine," published monthly by the Armstrong Machine Works, Three Rivers, Mich. The purpose of the magazine is to bring before readers the latest developments, improvements, methods and solutions of typical trap problems.

Domestic Uses of Monel Metal

"Modern Domestic Service Equipment" is the title of a manual on the use of monel metal in kitchens, pantries and laundries that has just been published by the International Nickel Company, Inc., of New York City. The manual, which contains 32 pages, is beautifully printed on heavy stock, and is bound in a sturdy, dark green cover. It contains a large number of photographs of actual installations of the equipment in homes. Most of these are custom construction jobs, and the photographs are designed to illustrate the flexibility of design to meet special requirements of plan, space or service that custom construction permits. The manual also shows the company's line of standardized monel metal kitchen sinks, designed for use where special custom-built construction is not required.

Catalog of New Heating and Ventilating System

The Trane Company of La Crosse, Wis., has issued a 16-page catalog, 8½x10½ in., which describes and illustrates in detail its new heating and ventilating system for schools, colleges, public buildings, offices, etc., where a large number of people are present. Ventilation codes for such buildings usually call for the induction of a definite number of cubic feet of outside air per minute for each individual. If outside temperatures are low, this air must be heated to a comfort degree in order that room occupants are not exposed to cold drafts. It is important to know that under such conditions, the actual control of the room temperature is maintained in this system by auxiliary convection heaters and not by reducing the temperature of the induced air through the ventilating device; all drafts are thus eliminated. Tables of capacities and roughing-in dimensions as well as specifications are given on the last pages of this catalog.

New Catalog of Concealed Radiators

American Radiator Company of New York, a subsidiary of the American Radiator & Standard Sanitary Corporation, has just issued a catalog of concealed radiators, consisting of 36 pages, 8½x11 in., describing and illustrating new concealed radiators for steam and hot water heating. These new radiators consist of steam or water chambers in the form of seamless copper tubes, welded to which are extended heating surfaces in the form of flues. These seamless copper tubes are oval in shape because the oval shape effects good air circulation through the radiator, and therefore high heat output, great efficiency and a most desirable self-cleaning surface. These radiators are designed to meet the demand for out-of-sight and out-of-the-way radiators of small dimensions, recessed into the wall and appropriately enclosed. The value of this catalog is greatly increased by the addition of many tables and charts, such as the dimensions of the radiators with tables and graphs.

1 Operates on ½" or ¾" Supply Pipe
2 12 or More Gallons Per Minute
3 Uses Only 2½ Gallons of Water

Patented and Patents Pending

New!

A Flush Valve Closet for the PRIVATE HOME as well as for larger buildings.

"Murdock" Alternater Closet

4 NOT JUST ANOTHER FLUSH VALVE ON A REGULAR CLOSET BOWL, but a complete new combination consisting of a new type of bowl with a new type of valve, employing an entirely new alternating principle of flushing.

5 NOT A "FREAK" TYPE OF ANY KIND. NO CRAMPED TRAP OR RESTRICTED WATERWAYS.

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THE MURDOCK MFG. & SUPPLY CO.
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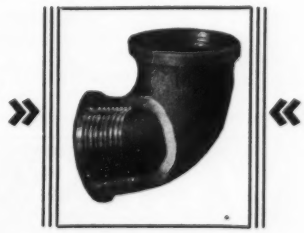

Clean threadways—Tapping to gauge—Absence of sand holes—all go to distinguish—IMICO—Fittings.

A full line in malleable iron, cast iron and brass.

Also manufacturers of brass and iron valves.

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MANUFACTURERS OF BRASS AND IRON VALVES

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with built-in dishpan

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"AMERICAN SEAL"
Pipe Joint Cement
DRY OR PLASTIC • GRAY OR GRAPHITE

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Stop this!

Eliminate those unexpected "shots" of hot and cold water in shower baths. Stop the time wasted in trying to get water at the right temperature. Install Powers Mixers. Write for 20-page book.

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LEADING water heater manufacturers throughout the country have adopted Gerstein & Cooper Copper Storage Tanks as their standard of quality, because of their reputation for long life and dependable service.

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Business Changes by Contractors

Williams, Ariz.—E. C. Nebe has bought out the business and equipment of the R. T. Peck Plumbing Co., and will add it to his Sanitary Plumbing Co. shop.

El Paso, Tex.—The partnership between E. N. Wiegel and C. C. Horner, doing business under the firm name of Wiegel Plumbing & Heating Co., has been dissolved, Mr. Horner selling his interest to Mr. Wiegel, who will continue alone.

New Contractors and Incorporations

New Haven, Conn.—The Ideal Plumbing & Heating Co., 208 Meadows street, recently incorporated with $50,000, has filed organization papers listing the following officers: President and treasurer, Leo Setlow; vice president, J. G. Crowther; and secretary, David Chernoff.

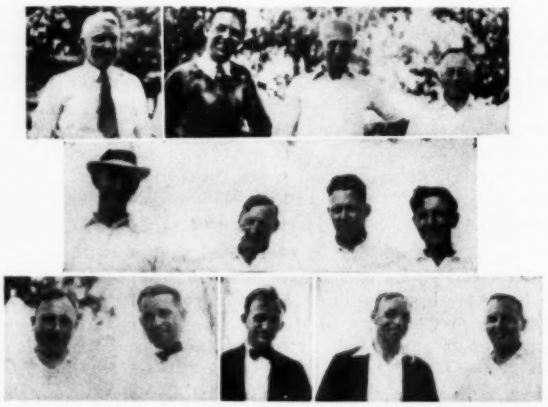
San Francisco, Calif.—J. F. Morley has engaged in the plumbing and heating business at 1740 Sacramento street.

Portland, Ore.—H. P. Olsen has established himself in the plumbing and heating business at 1117 East Madison street.

Torrington, Conn.—The Torrington Plumbing & Heating Company has been incorporated to engage in business, with a capital of $50,000. The incorporators are: Stephen J. and Mary T. Serley and Raymond H. Connor.

Yonkers, N. Y.—The firm of Joseph M. Bocanegra, Inc., has been chartered by Joseph M. Bocanegra and associates, to establish and operate a plumbing engineering and contracting business. The new concern, capitalized at $20,000, is represented by C. Alexander, local attorney.

Brooklyn, N. Y.—The Kings County Heating Company



Top row: F. E. Doyle, Frank E. Doyle, Inc., New Haven, Conn., president of the Connecticut Plumbing and Heating Trade Golf Association; R. E. Jones, Seeley & Jones, Inc., Bridgeport; C. V. Haynes, vice president of Hoffman Specialty Co., Waterbury, Conn.; V. H. Kincaid, Wellington-Kincaid Co., Bridgeport. Middle row: David Burns, Wallingford, Conn.; Robert Handy, East Haven; J. E. Daly, Wallingford; H. D. Williams, C. S. Mersick & Co., New Haven. Bottom row: R. J. Dittrich, J. J. McCarthy, both of Crane Co., Bridgeport; Walter Alexander, American Radiator Co.; M. K. Blackwell, Wolverine Brass Works; A. J. Holmes, Richardson & Boynton Co. Photos taken at the July meet of the Connecticut Plumbing and Heating Trade Golf Association

Top row, left to right: Theodore Ahrens, president, American Radiator and Standard Sanitary Corp., New York City; C. P. Finke, Sheboygan, Wis.; H. H. Clark, central states' representative, Merco-Nordstrom Valve Co., Inc., San Francisco, Calif. Bottom row: James C. Matchett, vice president and general manager, Illinois Engineering Co., Chicago; George S. Clarke, local secretary, also secretary of Secretaries' Conference, Detroit, Mich., and Joseph F. Himmelspach, executive secretary, St. Louis association. Photos taken at the annual convention of the Heating and Piping Contractors' National Association, held recently at Louisville

has been organized and incorporated, with a capital of $10,000, to establish and operate a heating engineering and contracting business. The law firm of Horowitz and Falk, 515 Broadway, represents the new company.

New York City—The Bernard Plumbing Company has been organized and incorporated, with a capital of $10,000, to establish and operate a plumbing engineering and contracting business. The new concern is represented by A. M. Katz, 570 Seventh avenue.

New York City—With a capital of $5,000, the Birnbaum Plumbing and Heating Company has been organized and incorporated. It is planned to establish and operate a plumbing and heating engineering and contracting business in the Bronx. H. Antokoletz, 2 Lafayette street, represents the new firm.

Milwaukee, Wis.—W. H. Egan & Son, Inc., 600 E. Kilbourn avenue, has filed articles of incorporation with the Wisconsin Secretary of State, listing its capitalization at 500 shares no par value. The firm conducts a plumbing and heating business. Incorporators are E. J. Egan, H. Burns and R. Cooper.

Schenectady, N. Y.—With a capital of $25,000, E. J. Marco and associates have organized the firm of E. J. Marco and Brothers, Inc., to establish and operate a plumbing engineering and contracting business. The new concern is represented by the local law firm of Strong and Golden.

Brooklyn, N. Y.—The Peerless Plumbing and Heating Company has been organized and incorporated, with a capital of $10,000, to establish and operate a plumbing and heating engineering and contracting business. The new firm is represented by N. Feldman, 16 Court street.

White Plains, N. Y.—With a capital of $10,000, the Callahan Heating Company has been organized and incorporated, to establish and operate a heating contracting and engineering business. The law firm of Parson and McClung, of Albany, N. Y., represents the new concern.

Check Freezing with

Ozite

PIPE COVERING

Wrap Ozite Pipe Covering around all cold water pipe and brine pipe lines. Prevent the costly damage of frozen pipes in winter—stop them sweating in warm weather. Made entirely of pure cattle hair — it is Nature's natural insulator. Easy to handle and apply. Write for sample.

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RED-BLAST
BOILER
With Blower
and Boiler Control Switch

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Utica, N. Y.

What Women Are Doing

It's a Great Life If Your Endurance Is Good!

Another complete short story, from the interesting biography of the wife of one of the men in the trade who, as you will find, is doing much to promote her husband's business. This interesting story tells how this clever business woman helps in her husband's office

ONE DAY a woman, Mrs. Reynolds let us call her, phoned about a repair part that we had ordered for her and which had not come in as yet. It must have been one of her "off" days, for from the beginning of the conversation she seemed bent on argument. She ordered this part three weeks ago, she said, when I knew very well that it had been ordered only ten days before at the most. We were to wire the order in and she was very sure that we had not done so, she added, whereas I knew that I, personally, had sent the telegram and had followed it with a letter. I tried politely to explain to her that the part had been ordered as directed, that I would wire the factory again immediately, but that they were in the midst of their busy season and much quicker shipment was not to be expected.

One thing led to another. She complained that she had never seen such poor service, that she was sorry she had ever heard of us, and that if the part was not in by the end of the week she would most certainly cancel the order. When she berated our service, she got deep under my skin, for I knew that we had done everything that we knew how to do to please her. I flared up then, too, and forgot the sage advice that "the customer is always right," and I told her our side of the story. No one could tell me that our service was poor and get away with it and in our battle of words of course I said more than I should have said.

The repair part in question came in later that same day, and just to prove that our intentions were the best ever, my husband took the part up and installed it after working hours. Mr. Reynolds was profuse in his appreciation for this special service and said that he was sure that we must have a very excellent organization, but that he would suggest that we get rid of the very rude girl who answered the telephone.

"Oh, you mean my wife," my husband smiled, for he had heard the story.

Mr. Reynolds' feathers fell. "Was that your wife who talked to Mrs. Reynolds to-day?" he said, and then he chuckled. "Well, my wife wasn't feeling well, and maybe they were both a little to blame for the turn the conversation took. Let's forget all about it, for in spite of what may have been said, you have certainly proved that your service is excellent."

That taught me a lesson, however, and from that day to this, though it still riles me to have anyone belittle our service, I have learned to keep a sharp curb on my comeback and endeavor to show any one who complains by actions and not words how wrong he is. It might be said that the above incident marked the beginning of my conscious cultivation of a telephone personality. (To be continued.)

Past National President Sends Season's Greetings

Mrs. W. E. McAndrew of Tampa, Fla., past president of the Women's Auxiliary to the National Association of Master Plumbers, sends the following Christmas and New Year's message to members of the auxiliary:

"How many blessings we have to be grateful for each day, each year, we do not realize until we see how many unfortunate ones there are around us with whom fate has dealt less kindly.

"For these many blessings let us show our gratitude in doing for those who are less fortunate and helping them to enjoy Christmas of cheer. Make someone happy by helping to supply some of their real needs and be happy in the thought of having done this.

"A Merry Christmas and a Happy New Year to all of my auxiliary friends and to DOMESTIC ENGINEERING."

(Signed) Mabel McAndrew, past president,
Women's Auxiliary to the N. A. M. P.

Minneapolis Women Hold Meeting in New Quarters

Wesley Temple, the new headquarters for the Minneapolis, Minn., Women's Auxiliary, was the scene of the November 3 meeting. During the course of business events, it was voted to spread Christmas offerings to charity out over the year instead of just at Christmas time. Also amendments to the by-laws were passed, the most important being that officers can hold office more than one year and that the nominating committee be selected from the floor instead of by the president.

A discussion followed, as to a house warming to association members to celebrate moving into the new headquarters at Wesley Temple. The following were nominated from the floor to serve on the nominating committee: Mrs. A. H. Lacher, Mrs. William Elsen, Mrs. Otto Nelson. An election was scheduled for December 1.

Top row, left to right: Miss Helen Walck, Mrs. Carl Schmauch, Mrs. N. Walck and Miss M. Walck, all of Hazelton. Bottom row: Mrs. George F. Uber, Philadelphia; Mrs. F. W. Renwer, Harrisburg; Mrs. Thomas M. Dugan, McKeesport; Mrs. James H. Lutz, Jr., and Mrs. William Logan, both of Harrisburg. Photos taken at the annual convention of the Pennsylvania State Association of Master Plumbers, held recently at Allentown

On November 17 a luncheon was held at the Oak Grove hotel, followed by bridge and five hundred. Hostesses were Mrs. L. O. Klopfer, Mrs. C. W. Clark, Mrs. R. E. Arthurs, Mrs. Ernest Buchett and Mrs. W. G. Christensen. There were 30 members present.

Give Card Party in North Hudson, N. J.

The Women's Auxiliary and the North Hudson, N. J., Master Plumbers' Association held a joint card party on Friday, November 13th. The games were bridge, pinochle and bunco. Refreshments were served. The committee consisted of Mr. D. Thurnau, chairman, Mrs. W. Jacob chairlady. The supporting committee was Messrs. E. Wittreich, A. Thane, Sr., Frank Kasper, H. Hammerle, T. Ducate, Fred Baker, C. Werner, H. DaPrato, Mrs. D. Thurnau, Mr. and Mrs. Triani, Mr. and Mrs. H. Henry Bunker, Jr., and Mrs. W. T. J. Orriss.

Two Meetings Held by Ogden, Utah, Auxiliary

The November 12 meeting of the Ladies Auxiliary to the Sanitary and Heating Engineers of Ogden, Utah, was held at the home of Mrs. John H. Blaes with all members present with the exception of Mrs. K. Bachman, who was ill. During the business meeting the report of the October 1 meeting as given in "Domestic Engineering" was read. After the collection of dues, the remainder of the

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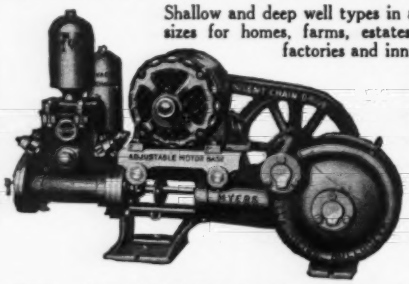

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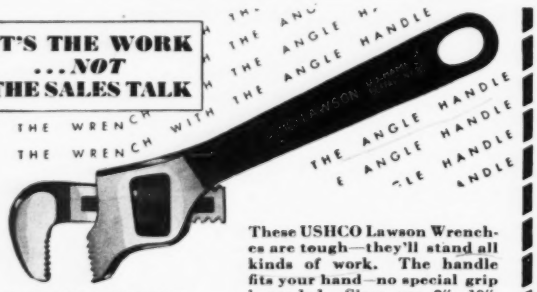

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evening was spent playing cards. Hot tamales and chili were served on the card tables. Tall vases of yellow chrysanthemums were used as decorations in the living and dining rooms.

The October 29 meeting was held at Mrs. M. Bachman's home, with all members present. Following the regular meeting cards were played, and later in the evening delicious meat pies and hot biscuits were served. A large bowl of garden flowers centered the table.

Boston Women Make Plans for Winter Season

The regular monthly meeting of the Boston Women's Auxiliary was held at the home of Mrs. William Kelly in Dorchester, Mass., on November 17. Reports were read and plans for the winter discussed. Delicious refreshments were served following the meeting, at which time the men joined in the enjoyment of a pleasant evening.

Portland Auxiliary is Entertained

The Portland, Ore., Women's Auxiliary held its monthly meeting on November 10 at the home of Mrs. C. C. McCoy. After the various reports were read, bridge was played. Luncheon was served at a chrysanthemum-decorated table. Hostesses to the 10 guests present were Mrs. C. C. McCoy, Mrs. T. Spreadborough, Mrs. Earl Parker and Mrs. E. Murphy. Mrs. Widmer will entertain the auxiliary at her home for the December meeting.

The October meeting was held at the home of Mrs. George Kendall, with fourteen in attendance. It was strictly a business meeting, after which luncheon was served. Decorations were fall flowers.

Kansas City Women Raise Charity Fund

The Women's Auxiliary to the Kansas City, Mo., M. P. Association held a card party and dance at the Pla-Mor on November 24, the proceeds of which were given to the charity fund for the unemployed of that city. There was a good attendance and a substantial sum was raised.

Mrs. Frank Smith of the auxiliary recently entertained the members with a delicious luncheon in honor of the birthday of Mrs. E. D. Hornbrook, honorary member. A beautiful potted plant was given Mrs. Hornbrook and a pleasant afternoon was spent in relating the most humorous incidents in the lives of those present.

The members of the master plumbers' association met with the auxiliary members at a called meeting early in

Top: Mrs. Robert Liss of Chicago, treasurer of the National auxiliary. First row: Mrs. A. W. Obst of Robinson, Mrs. L. W. Housman, Mrs. R. L. Wagner of St. Charles, and Mrs. F. W. Seifert of Peoria. Second row: Mrs. C. A. Dreier and Mrs. H. P. Reger of Chicago, Mrs. E. J. Ryan of Danville, Mrs. R. J. Weber, Mrs. George Matthews, Mrs. William Redieske and Mrs. Charles Harris, all of Chicago

Top row, left to right: Mrs. N. J. Dericks, Mrs. F. Bilowith, Mrs. T. Wasnewski, Mrs. C. Hooyman and Mrs. L. Weigele, all of Clifton. Bottom row: Group of ladies from Orange attending the annual convention of the New Jersey State Women's Auxiliary, held recently at Trenton

November at the rooms of the association. An enlarged, framed portrait of the late E. D. Hornbrook was presented to his widow. W. F. Coakley, secretary of the association, made the presentation speech. Mrs. Ervin Spaeth, president of the women's auxiliary, was among those present.

North and Northwest Auxiliary Gives Card Party and Luncheon

The November meeting of the North and Northwest Master Plumbers' Women's Auxiliary of Chicago was held in the form of a luncheon and card party, preceded by a short business meeting, on Monday, November 23. This meeting was held for the purpose of bringing a larger number of members together. Heretofore meetings had always been held in the evening. It was regretted that the Illinois state officers, Mrs. Hildeman, president, and Mrs. Bolton, secretary, were unable to attend. Mrs. Robert Liss, past national treasurer, is convalescing at her home after a serious operation.

Rock Island and Moline Women Meet

The November meeting of the Women's Auxiliary to the Rock Island and Moline Master Plumbers Association was held at the home of Mrs. E. L. Householder of Rock Island, Ill. There was a good attendance and following the business routine visiting was enjoyed. Refreshments were served by the hostess. Miss Mildred Lamp, Rock Island, invited the auxiliary members to her home on December 14.

North Shore Auxiliary Gives Christmas Baskets

The November 19th meeting of the Women's Auxiliary to the North Shore Plumbing Contractors Association of Chicago, was held at the home of Mrs. Butow. The ladies convened at 2 o'clock and were served coffee and dessert. At the business meeting which followed, plans were discussed for the December meeting and it was decided that each member should bring some gift for a child for the Christmas baskets. It was decided to discontinue the custom of the past of exchanging gifts.

Bridge honors went to Mrs. Mergenthaler, Mrs. Kyle and Mrs. McKenna, while Mrs. George Moore carried off the honors in bunco.

Mrs. Fred Flader entertained the auxiliary at her home on December 17.

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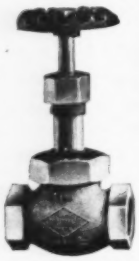

Fig. 106-A

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Pipe —— Lines
Connected by LYT

There is a current belief that Englishmen do not understand the slang phrases we use in America. But there is a certain American gentleman who has his doubts about the truth of this belief. His daughter, it seems, married a duke, and the duke has cabled the father to "come across."

WELL! WELL! HERE'S ONE ON A SCOTCH LADY

A Scotch lady was buying a birthday present for her husband. In the men's furnishings department of a big store she asked for a celluloid collar, size 16. The clerk quickly found the appropriate box in which the collars were kept and inquired in mild surprise:

"Only one, madam?"

"Yes, certainly, only one," said the lady haughtily. "Do ye think I'm a bigamist?"

LEIGHTON'S GLOOM CHASER.

Generally speaking, puns are not used in the best intellectual circles; but we can't pass by the story of the fortune teller who had read the tea leaves, or the cards, or what have you. A little later she met her victim. "Well," she said, "I told you your ship would come in soon. Was I right?"

"Partly," replied her victim. "You see, my salary was docked this week."

ON THE OTHER HAND, ABOUT THE ENGLISH

While it may be true that Englishmen sometimes find it difficult to understand our way of putting things, now and then an American is confused by English phraseology, as witness:

BENSON: "Well, I'll be—! I don't believe any woman could ever be so fat."

JENSON: "What are you reading?"

BENSON: "Why, this paper tells about an English woman who lost two thousand pounds."

WHAT?

They were at the table.

"Won't you have something more to eat, Mr. Smith?"

"Just a mouthful, please."

"James, fill Mr. Smith's plate."

THE GENTLEMAN'S SHIPPING INSTRUCTIONS SHOULD HAVE BEEN MORE EXPLICIT

A gentleman who had money, but who had a strong tendency to hang onto it, was looking for a Christmas gift for a friend of his. He passed a store and saw a beautiful vase in the window. The vase had met with an accident and was broken into a dozen or more pieces. He went into the shop and offered the proprietor fifty cents for the pieces, instructing him to wrap it up and mail it, with the idea that his friend would think it had been broken in the mails.

A few days after Christmas he received a note from his friend: "Thanks for the beautiful vase," it read. "So thoughtful of you to wrap each piece separately."

"That man who believes he can do anything," says an inspirational speaker, "can do anything." Yeh; just so long as he doesn't try.

First Publicity Manager: "Do you hire your stenographers for their looks or their ability?"

Second Publicity Manager: "Well, frankly, I like for them to have at least a small amount of ability."

The hand that rocks the cradle (a beautiful thought)—often wrecks the car.

L Y T.

Bath a Day Movement

177

In one hundred and seventy-seven cities and towns in the United States, "The Story of the Bath" has been distributed to school children for classroom reading. Is your city among them?

A LETTER from a small town in Wisconsin, from a visiting nurse, contains the fact that children have to take their baths in sauerkraut barrels. It makes a laughable story—but it indicates that the modern ideal of sanitation has not been sold to that community. "The Story of the Bath" would be a splendid educational effort to precede a direct selling effort

Requests from plumbing contractors continue to come in for the Twenty-Minute Program for use at Rotary, Lions, Kiwanis, and other club luncheons of the same character. A copy of the program will be sent without charge to any reader of "Domestic Engineering" asking for it. Also a copy of "The Story of the Bath."

Little Sentences That Sell

Write one of these BLACKBOARD EPIGRAMS on your window or bulletin board each day. Many master plumbers and heating contractors find them real business getters.

The dentist does a wide-open business.

* * *

It isn't scandal until people begin to talk about it.

* * *

Gray heirs that can be counted don't count.

* * *

An unwelcome guest is one of the best things going.

* * *

Sometimes it's a good thing if it turns out bad.

* * *

The street car conductor is a way-faring individual.

* * *

The man who burns his money leaves a hot trail.

* * *

The wisdom of the owl is only exceeded by his stupidity.

* * *

The pedagogue's rule often works both ways.

* * *

The multiplication table affords the miser food for thought.

* * *

When a farmer tickles the earth his fields laugh with crops.

* * *

Most things come to those who hustle while they wait.

The AMERICAN SANITARY MFG. CO.'S wishes are that

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will be more full of the better things for you than any year has ever been

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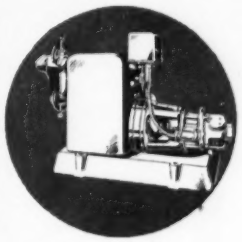

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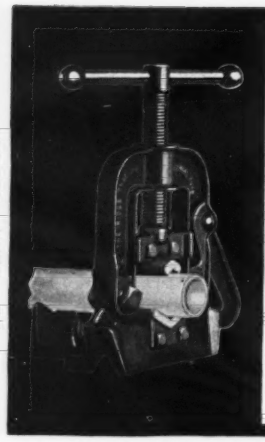

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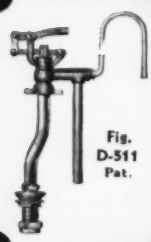

Fig. D-511 Pat.

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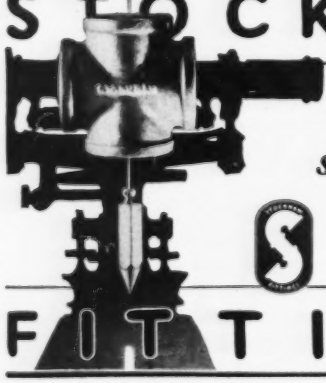

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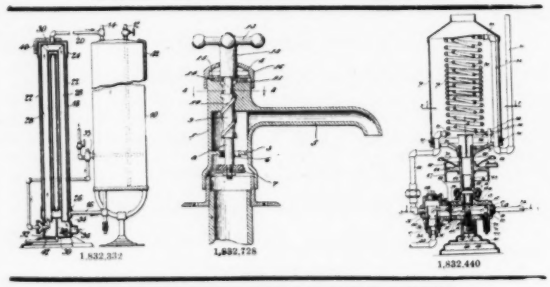
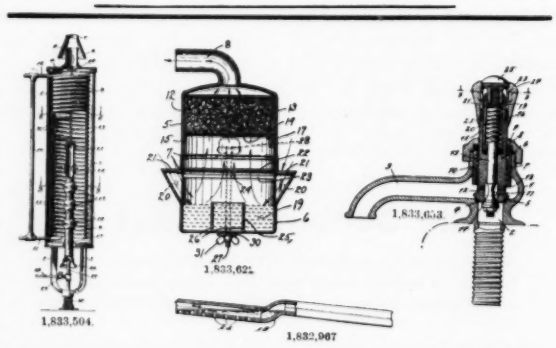
1,832,332. Hot Top Water Heater. James L. Stone, Spokane, Wash., assignor to Doherty Research Company, New York, N. Y., a corporation of Delaware.



1,832,728. Faucet. Earl W. O'Dowd, New Orleans, La.

1,832,440. Water Heater. John Wilhelm, Philadelphia, Pa., assignor of one-third to Max Albert and one-third to Harry Blank, Philadelphia, Pa.

1,833,504. Water Heater. Alvin J. Thomas, San Francisco, Calif.



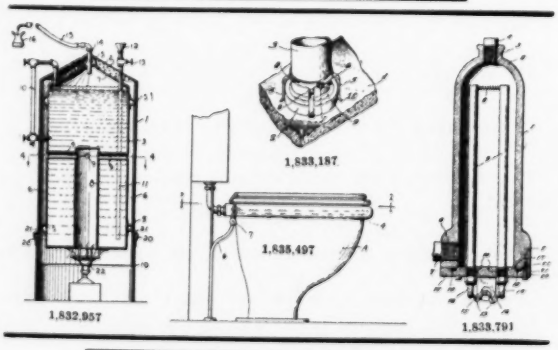
1,833,622. Air Cleaner and Filter. Harry Smick, Yakima, Wash.

1,833,653. Valve. Willett Martin, Elizabeth, N. J.

1,832,967. Sewage Distributing Pipe. David Craig, Peabody, Mass.

1,832,957. Sewer Cleaner. John Arbosuckos, Carnegie, Pa.

1,833,187. Expansion Pipe Fitting. Alfred E. Stringer, Chicago, Ill.



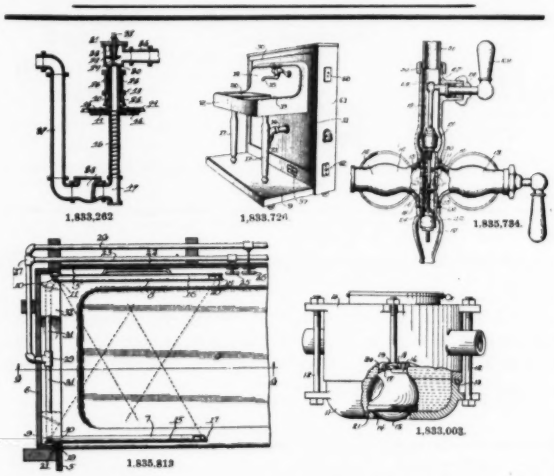
1,835,497. Water Closet. Barton Kahn, Tulsa, Okla.

1,833,791. Casing for Electric Water Heaters. John G. Parkhurst, Tacoma, Wash.

1,833,262. Pipe Connection Joint. Ferdinand Edgar Reed, Vancouver, British Columbia, Canada.

1,833,726. Demonstrator Sink. Edgar S. Stoddard, Berwyn, and George Simkus, Chicago, Ill., assignors to The Conover Company, Chicago, Ill., a Corporation of Illinois.

1,835,734. Shower Bath. Werner W. Wanzenberg, Evanston, Ill.



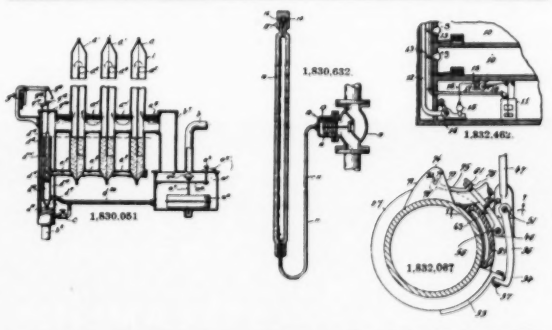
1,835,813. Bath Fixture. Lisle C. Schaub, Chicago, Ill.

1,833,003. Water Meter Bottom. Edgar E. Spencer, Picher, Okla.

Heating Department

1,830,051. Steam Heating System. Louis W. Carroll, Riverside, Ill., assignor of one-half to Glenn Muffly, Chicago, Ill.

1,830,632. Freezing Thermostat. Sigurd Mattias Backstrom, Stockholm, Sweden, assignor to Platen-Munters Refrigerating System Aktiebolag, Stockholm, Sweden, a corporation of Sweden.



1,832,462. Method of and Apparatus for Heating Multi-apartment Buildings. Mark C. Honeywell, Wabash, Ind., assignor to Minneapolis Honeywell Regulator Company, Wabash, Ind., a corporation of Delaware.

1,832,067. Clamping Band Device for Pouring Pipe Joints. Thomas A. Ward, North Arlington, N. J.

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All Backed By
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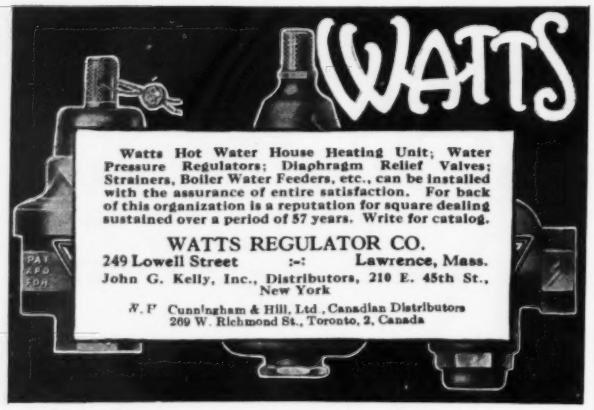
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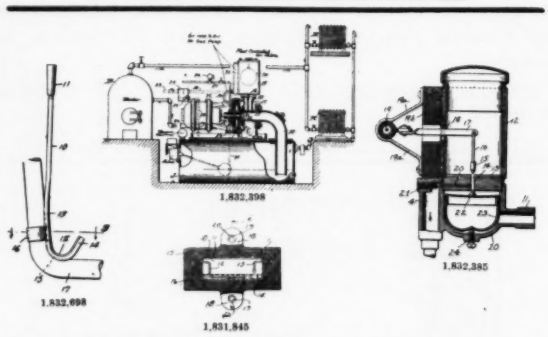
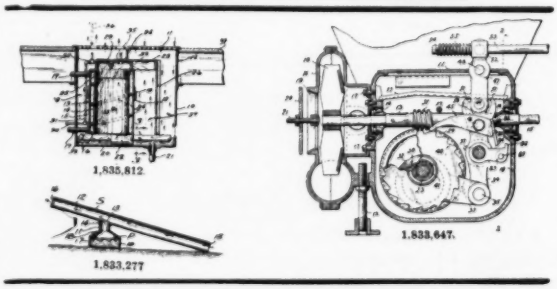


1,832,385. Room Temperature Regulating Air Valve. Edward S. Halsey, Miami Shores, Fla.

1,831,845. Mercury Switch. Paul K. Cramblet, Milwaukee, Wis., assignor, by mesne assignments, to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a corporation of Delaware.



1,835,812. Air Washer and Humidifier. Harry C. Ridler, Minneapolis, Minn.

1,833,277. Apparatus for Heating Orchards. Nephi W. Cummings, San Bernardino, Calif.

1,833,647. Stoker Feeding Mechanism. Louis L. Hinsch, Sidney, Ohio, assignor to The Cleveland Stoker Company, Cleveland, Ohio, a Corporation of Ohio.

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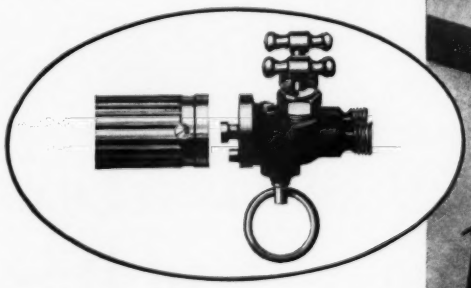
CAN USE *this Cutting Attachment—*

The Prest-O-Weld Detachable Valve Body Makes Ten Seconds Ample Time to Change Blowpipes.



FOR welders and shop owners who need a cutting blowpipe so seldom that it doesn't pay to buy a standard model, the Prest-O-Weld Cutting Attachment is just the thing. It costs less than a complete blowpipe, but it uses the same nozzles as the Prest-O-Weld Type C-105 Cutting Blowpipe and does the same kind of work. It is auxiliary equipment for either the Prest-O-Weld Type W-105 or Type W-106 Welding Blowpipe and is small enough to be carried in the pocket when not in use.

This cutting attachment is typical of the accessories which make Prest-O-Weld Blowpipes so widely useful and so truly economical for the welder or shop owner who does not care to make a large apparatus investment. Each Prest-O-Weld Blowpipe is so designed that with the proper accessories it will do almost every kind of welding or cutting job.

You can buy Prest-O-Weld Blowpipes from jobbers in all parts of the country. Prest-O-Weld jobbers will be glad to show them to you.

Prest-O-Weld Type CW-105 Cutting Attachment

The Prest-O-Weld Type CW-105 Cutting Attachment is of the single joint type and attaches directly to the Prest-O-Weld Detachable Valve Body. Although only 11 in. long and small enough to be carried in the operator's pocket when not in use, this attachment will cut metal up to 2 in. in thickness. It has all the advantages of design and construction which characterize full-size Prest-O-Weld Cutting Blowpipes. The two nozzles supplied with this blowpipe are the same as those used on the Type C-105 Cutting Blowpipe.

Prest-O-Weld Type CW-105 Cutting Attachment, complete with nozzles Nos. 1 and 2, lighter and wrench.....Price $21.00

Prices slightly higher west of the Rocky Mountains

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

126 Producing Plants UCC 627 Warehouse Stocks

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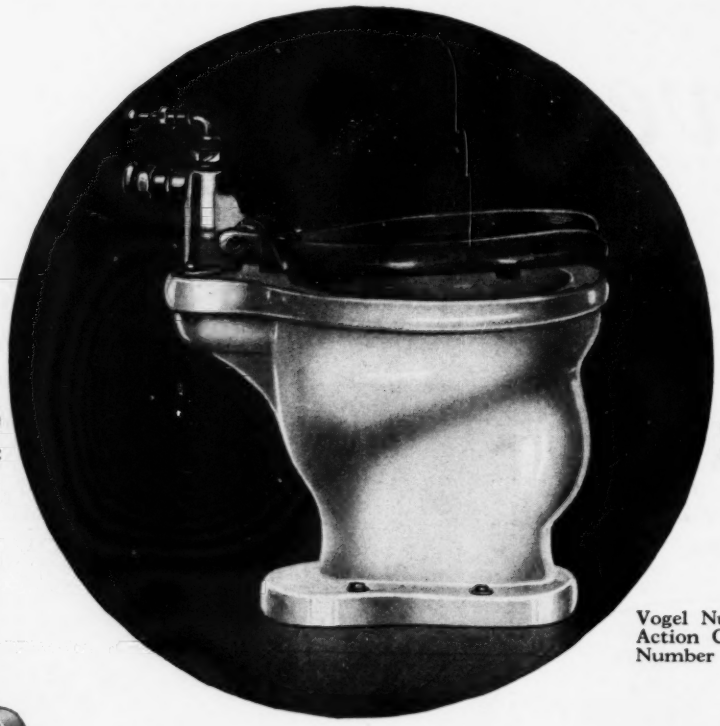
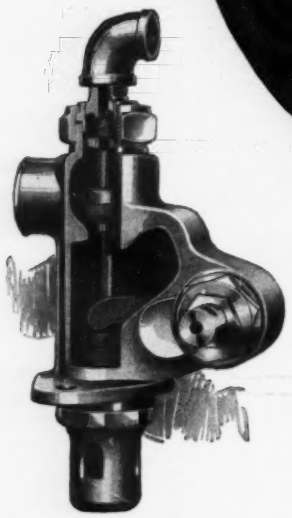


Vogel Number Ten-A Seat-Action Closet Combination. Number Ten has exposed tank.



The simple and sturdy valve of the Vogel Number Ten-A

July 16, 1929 seems like a long time ago . . . And it is

THAT was the day we started the VOGEL Number Ten on its ENDURANCE TEST.

We knew we had a great outfit in the Number Ten and Ten-A, because plumbers were putting them in factories and schools all over the country, but we wanted to see just how long one would last under conditions tougher than actual use.

Well, here it is—the end of 1931 and the Number Ten is still operating; night and day it has flushed continuously 383,950 times, the equivalent of 130 years' use.

We had to renew a washer, after it had flushed about 250,000 times. This required but three minutes!

This test is going to continue during 1932 and indefinitely as far as we're concerned, and every day it is proving more conclusively that VOGEL Number Ten and Ten-A Closets are great outfits for plumbers to install in schools, institutions, waiting rooms, office buildings, comfort stations, and factories.

See inside front page for VOGEL Frost-Proof advertisement

Literature is available—imprinted, of course

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Wilmington, Delaware St. Louis, Mo.

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